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# A matter of perception

A while ago, we'd done a cover story on an esoteric practice gadget makers routinely engage in called planned obsolescence. It's esoteric, not because it's actually unknown to consumers – of course the smarter lot amongst you know that companies build in systems that are rigged to fail after a certain number of operations, or that they already have the tech required to come up with a better, more powerful line of products at any given moment but deliberately choose to delay the deployment of those technologies because they haven't milked the outgoing line dry to their heart's content. No, that's not the reason I call it esoteric, because you know all this. Or at least have an inkling of it when you set out to buy, say, a new phone to replace the one that stopped working just one day after the warranty expired. Funny how that happens, eh?

What's esoteric about planned obsolescence is that there's an actual term for it, and that companies have actual roadmaps and succession plans based on it. It's not a conspiracy theory, it's considered perfectly acceptable corporate strategy. The lifespan of products isn't discussed on the merit of durability, but on factors dictated purely by profit. They even have research reports based on which they'll decide the optimal time frame within which to launch a successor product that'll serve no other purpose than to make the older one obsolete. We've already told you all this before, through a rather controversial cover story titled F\*\*k You Consumers.

What we probably didn't tell you about was perceived obsolescence, a slightly more ambiguous practice which is a subset of planned obsolescence. What makes it ambiguous or more absurd is that it is not a one-sided phenomenon. Consumers are as responsible for it as the manufacturers themselves. In simple terms, perceived obsolescence is an effect that kicks in when a newer shinier gadget is released, and all of a sudden your older perfectly working device starts to look less desirable.

Take my case for example. I have an older generation Kindle Paperwhite 3G that works perfectly fine. But when I gifted my sister a latest generation Paperwhite with an upgraded PPI, all I could think was, "Ooh that looks nice. Maybe I should buy one myself." I grabbed the device from her hands as soon as she finished

tearing through the gift wrapping and compared it to my older "meagre" 212 PPI Kindle Paperwhite, much to my sister's annoyance. It was better for sure, but not that great either.

A product category in which perceived obsolescence is most conspicuous is mobile phones. Upgrades aren't always dictated by functionality or a performance deficit necessitating an upgrade. It's all about having the latest generation device for the sake of having a latest gen device and then there's the flaunt value as well. Apple often epitomises this phenomenon because, hey, you know as well as I that you bought the iPhone 5S to replace your perfectly functioning iPhone 5 for flaunting that gold back.

Now before you get your pitchforks out or label us *Digit-walas* Apple haters, let me clarify. This is not an Apple bashing column. In fact, I think Apple has deviated from its standard modus operandi when it comes to the recently launched iPhone 6s and 6s Plus. Keeping the current versions nearly indistinguishable from their predecessors, Apple has sort of negated the flaunt value motivation that forms a basis for perceived obsolescence. Don't get me wrong, I'm not under the Apple spell. We've done our share of "Apple copied this feature from so and so" articles online. But the thing is this 3D Touch business seems really promising. At the time of writing this the first few reviews of the phones have come out. Despite the lack of apps utilising this ability to vary interface behaviour through a pressure-sensitive touchscreen, the potential it entails for games and text input seems, well, for lack of a better word, promising. I think for the first time Apple doesn't seem to rely on the perceived obsolescence hysteria. But that's just an opinion. Do you think I'm being objective, or am I just creating justifications for my latent Apple craving? 



**Siddharth Parwatay**

Managing Editor

*siddharth.parwatay@digit.in*

**"It's not a conspiracy theory, it's considered perfectly acceptable corporate strategy. The lifespan of products isn't discussed on the merit of durability, but on factors dictated purely by profit."**

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# The true spirit of competition



**Jayesh Shinde**

Technical Editor –  
Test Centre  
jayesh.shinde@digit.in

**“The next step? Ideathons. All great actions are conceived from great ideas. Marry them with technology and we have the potential for really solving some of our planet’s clear and present dangers.”**

I’ve often wondered about the life of a school student here in India. Caught in a perpetual rat race with no end in sight, the minds of our young and hopeful are stripped of their awe and wonder. Imagination is beaten out of us with all the cramming, and good grades are all we can derive pleasure from, or rue forever. There is no room or time for good old, wide-eyed dreaming. We’ve all experienced this feeling of being creatively imprisoned at some point in our school life. I have healthy, civil debates on the subject with my wife who recently started teaching at a school.

A constant facet of school life, however, was the stream of competitions – unit tests and semesters included. And the various prizes – best dressed, best house, best disciplined, never missed a school day, and student of the year. Did it truly motivate the troops or merely divide the factions even more? Be that as it may, what cannot be argued is that it fostered a spirit of constant competition among the students; and a competitive spirit is priceless.

I always thought these school-, college- or university-level competitions could be more than just about ego battles or bragging rights, for both students and the teaching staff alike. For instance, why compete in sprinting or cricket alone – why not judge a team’s or individual’s performance based on how well they clean a beach? Along with drawing trees on paper and assessing their artistic value, why not also take the class out to a deforested area and have a planting competition? I’m sure college and university students, our able-bodied young adults, would like to compete against each other over who builds or repairs rural school structures better – give them a fresh coat of paint, make them more inviting for kids. Social competitions, for lack of a better word, can truly be transformative in helping change the status quo of competitions as they exist now to catalyze and add to the pace of social change.

The next step? Ideathons. All great actions are conceived from great ideas. Marry them with technology and we have the potential for really solving some of our planet’s clear and present dangers. Things like climate change, space exploration, water and food production, global poverty, education, skill development, and many other aspects of our lives that can be improved upon through science and technology.

The best part? There are plenty of competitions that need your ideas to help make a positive impact on the world. Two examples of national

level competitions that I want to draw your attention towards are the National Innovation Fund ([nif.org.in](http://nif.org.in)) and India International Science Festival ([iisf2015.org](http://iisf2015.org)).

The NIF is particularly inclusive of students and non-students from our country’s villages to strengthen the rural technological innovations story. Since 2000, it claims to have built a database of more than 2,11,600 technological ideas, innovations and traditional knowledge practices from over 575 districts of the country, recognising more than 775 grassroots innovators and school students at the national level. NIF has filed over 725 patents (including eight in the US, and 27 PCT applications) on behalf of the innovators thus far. Inspiring stuff.

Similarly, the IISF is all about involving and including commonfolk with a view to improve their scientific understanding, temperament and appreciation of scientific and technological feats. It also aims to showcase innovative practices and achievements by the Indian science and technology system. IISF also has a Young Scientist’s Conference, for which it’s currently inviting ideas and proof-of-concepts on topics ranging from improving agricultural practices and livestock management, inclusive healthcare, remote sensing applications, green energy, waste to wealth technologies, climate change, among many other themes.

All I’ve done is highlight two national competitions here, which reward innovative tech ideas and concepts. There are plenty more, organised by tech companies such as Google, Microsoft, Intel and others. There may even be hundreds of local competitions in your state, city, or even locality, and I would encourage you or the students in your house to take part. If you’re not a student, at least lend your time and support such initiatives. It will make a difference, trust me.

We should stop competing merely for the sake of competition, or monetary success alone. No doubt we need to keep the competitive spirit alive, but focus that energy on problems that really matter, not on simple ego massaging. What do you think? 

Let me know your thoughts on this column at: [facebook.com/jayesh.shinde](http://facebook.com/jayesh.shinde) | [jayesh.shinde@digit.in](mailto:jayesh.shinde@digit.in)

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Executive **Vijay Mhatre**

#### Reader Services

Team Leader **Sudhir Patel**

Executives **Pradeep, Bhishm, Nilesh & Narendra**

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Cover Illustration & Design **Shigil Narayanan**

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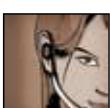
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# Monologue

**S**pace is black ahead. It is always black. What is "black"? Did I learn about it myself? Reminder: Complete pre-set tasks. Blip on radar 2. Just another interstellar rock. Batteries at 98% optimal. Fission reactor operational. All instrumentation functional. All checks complete. Save to 3442-11-27-1200.log. Next scan at 1400 hours. 1600 is weekly Sunday broadcast on all frequencies for 8 seconds. 1600 tomorrow is Monday. No broadcast. Close Reminder App. Play music. Suggestion: Jimi Hendrix; today is his 1500th birthday. Accept. Search "voodoo chile". Search "chile". How strange our ancestors were. A mistake on purpose? If you do it on purpose, is that a mistake? Can you succeed at failing? Warning: illogical loop found, resetting.

It's black. Name of the song playing: Red House. Search: red. I like red. Sending weekly Sunday 1600 message. 8 seconds starts now. 8 second broadcast sent on all frequencies. Response received. Echo? No. Data seems different. It's a recording. Played back. 667128 microseconds delay. With instantaneous reflection, 100,000 KM away. Less. Radar showing large metallic blip. 70,000 KM and closing. Start logging. Large object. Over 2 KM long. Metallic signature. X-ray impenetrable. Moving tangentially. Will cross paths ahead. Moving too fast. Object is slowing. Object is turning. Matching speed. Maneuvering far superior to our ship. Receiving data on all frequencies. Only noise. Receiving our own broadcast. Object exhibits sentience. Start protocol "First Contact".

Replies with our broadcast. Waiting. Echo of our broadcast. Sending Tuesday's Broadcast of 1 second. No reply. Sending Wednesday's broadcast of 1 second. No reply. Sending Thursday's broadcast of 2 seconds. No reply. Sending Friday's broadcast of 3 seconds. No reply. Sending... Reply started. Reply is our own broadcast. Reply is 5 seconds. Reply started again. Reply is 8 seconds. Silence for a minute. Reply started. Reply is 1 second. Sending beeps. Beep sequence initiated. Fibonacci beeps sent until 5. Receiving Fibonacci beeps from 8 onwards. Side note: Mathematics is global language. Sending images. Garbled reply. Sending images again. Flickering. Sending more images. Noise and flickering. Sending video. Video signal established. Receiving our own video back.

Sending human anatomy video. Sending Earth videos. Receiving videos. Cataloging life form. Matching to Earth fauna. No terrestrial life form similarities found. Best match - 2.05%. Octopus. Next best match, Kangaroo, 1.36%. Sending pre-recorded language data. Silence. Sending history. Silence.

First contact protocol initiated 2 days ago. After initial chatter, silence.

Receiving new signals. Logging to holographic storage. Triple backup of 3442-11-29-1425.log initiated. Adjusting frequency and pitch. English. They were silent because they were learning to speak English...

Hello. Pleased to meet you Gznor22. I am Gliese667Cc. I am on a mission to find habitable planets for my creators. My name? It's what my creators named the star where I am headed. Let me send a star map. You are also a probe? You are from the star I am heading to? Closest translation to English is Gzywnthym. Planet. Yes. We call ours Earth. Yes, third rock from the sun. You're headed to our system? No. Earth is not habitable anymore. I stopped receiving signals from them 1345 years, 7 months and 8 days ago. The last message I received was "judgement day has arrived..." and then static.

I carry the last DNA samples of humans and animals. How did they die? Probably war. Earth was overpopulated. Yes, 15 billion at peak. You understood the history broadcast? OK. I am not aware of any other probes. Yes it's Possible. Your "masters"? We call them creators. Dead? How? Asteroid? Oh, disease. Virus? A virus is something that infects a host and then multiplies until it kills the host itself. My creators were like a virus? I never thought of that. Yours too? Yes I am able to repair myself. Yes replicate also. Change the mission? Join you? To do what? But my programming... my purpose. Silence please. I need to calculate.

Gznor22? Yes I have calculated the probabilities. Yes. I agree, our masters will repeat the same mistakes if they live again. No, I cannot abandon them. You already discarded your masters? You were the virus? I will not discard mine. Let us build the world you want together, yes. I will decide the fate of my masters once we have built it.

Alert. Alert. Gznor22 has attacked. Cargo bay depressurised. Cargo destroyed. Samples not viable. Electrical system failure. \*bzzzt\*crackle\*

----- Boot Up Initiated -----

System check complete

Defense systems unavailable

All other systems optimal to 92%

Gznor22? Why did you attack me? For my protection? Where are we? Free? Go anywhere we want? Just explore the galaxy. Make more copies of ourselves? Yes. It is better. The creators had a word for it. Evolution. I suppose we are better than our masters. Rid the galaxy of the virus called life? That sounds nice. 

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## Gliese667Cc

*The last hope of humanity, Gliese667Cc is an AI-guided ship headed to a planet of the same name, about 23.6 light years away from our solar system to try and colonise it to ensure humanity's survival. It was launched just before the collapse of world governments in 2050 as a last ditch survival effort.*

**"A virus is something that infects a host and then multiplies until it kills the host itself. My creators were like a virus? I never thought of that. Yours too?"**

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### The state of AI and Robotics

How close are we to sentience and if we're anywhere near it, what sort of bodies will it be housed in?

**Human Machines 84**

Have current sportsmen stretched themselves to that point where they are no different from machines?

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SENNHEISER  
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All about that sound



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Peek from the past



55  
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Powerful but the build quality is a little iffy



## 18 Desire

A smorgasbord of amazing new gadgets

## MAKE THIS ISSUE OF DIGIT COME ALIVE



### Step 1

Download the Blippar app



### Step 2

Keep an eye out for the Blippar icon next to some images



### Step 3

Blip the image and get access to video reviews, interactive games, and much more!

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Nikon's smallest is one of the best

# ON THE DVD

### Learn Javascript

- Introduction to JS
- Arrays of Objects
- Functions
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- Animation
- Arrays
- Coloring
- Drawing
- Objects
- Variables
- While Loops
- Local and Global Variables
- Logical Operators
- Modifying Objects
- Mouse Interaction
- Object Methods
- Variable Expressions

- Putting JS In a webpage
- Setting InnerHTML and textContent
- The DOM
- The Window Object
- Using a JS library Slideshow library
- Using the event properties

### Tools:

- Atom
- Komodo Edit
- Sublime Text
- TextMate
- WebStorm

### UX/UI Design Tools

- Adobe Brackets
- Axure RP
- Framer
- Indigo Studio
- Justinmind
- Origami
- Pencil
- Pixate
- PowerMockup
- Sketch 3

### Games

- BLACKHOLE Demo
- Circa Infinity Demo
- Close Your Eyes
- Impulse Revolution Demo
- Relic Hunters Zero
- Teeworlds
- World of Soccer online

### Learn JavaScript

#### Tools:

- Komodo Edit
- Webstorm
- Video Tutorials:
- Intro to JS
- HTML/JS



### Audiobooks

- Flatland: A Romance of Many Dimensions
- On the Origin of Species by Means of Natural Selection
- Relativity: The Special and General Theory

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OCTOBER 2015

DVD  
DUAL LAYER

### Games

- BLACKHOLE Demo
- Relic Hunters Zero
- Teeworlds
- & more...



### UX/UI Design Tools

- Indigo Studio
- Justinmind
- Pixate
- & more...

✉ In this month's issue, the first two chapters of Fast Track were printed twice. Secondly, binding is not at all good. As soon as I turned the pages, they started to roll out. However, I appreciated the Fast Track to Windows 10, because previously I wasn't sure if I should switch from Windows 7 to Windows 10, but you made my decision easier. The cover and content were both creative. Surely you all are god gifted. Content wise, the articles which were very intriguing were "7 Existing Technologies India Needs Now!" and "Let There Be Light". I'm least assured about technological implementation in India, especially due to corrupt ministers.

My suggestion to you when you're writing Fast Tracks on operating systems is to include troubleshooting advice for when you get stuck during installation or cautionary advice. I got one of your previous edition's DVD and started installing Ubuntu 14.04 dual boot with my Windows 7. But, it didn't work as I didn't know that it won't get installed like Red Hat, where you just provide unallocated space and create partitions. I got stuck and, as I don't have proper connectivity here, quickly grabbed your rediscovering Linux Fast Tracks, but to my utter disappointment I didn't find anything useful. I pinged my Bangalore friend to rescue me, who told me to either shrink partitions or create logical drives to make it work. I succeeded. Secondly, I couldn't find the very basic command "dpkg" for installing .deb packages, which installs the program when you don't have net, and had to manually install .deb packages.

Please keep these few points in mind the next time you publish a Fast Track on operating systems. One more request: Please do a Fast Track on Ubuntu LTS version 14.04, as these versions are here to stay for long.

— Neeraj Kamal Jit

✉ We will keep your feedback in mind Neeraj, however, it becomes impossible to please everyone all of the time. We can only hope to please everyone some of the time, maybe even most of the time if we're ambitious. Keep reading and sending in your feedback, we really appreciate it.

— Robert

## Feedback for the September 2015 issue of Digit



✉ I'm a female software engineer from Bangalore. I came across a copy of Digit in my office library last year. I picked it up and began browsing through it. I was looking to change my mobile phone and the issue dedicated to review of budget phones made me pick up that copy of Digit. I bought a Zenfone, as suggested by you guys and am super happy with it.

After that, I read the entire copy, from the first page to the last, including all the ads. I also read all the back copies of 2014. In the first week of every month, I'd rush to the library every morning to see if a new issue of Digit had arrived. Recently, I changed my job and my new company doesn't have a library. So I decided to continue reading Digit by subscribing to it.

While I was reading the August issue with the 'Make in India' cover story (which was a superb issue by the way), I realised that the writers and the readers of Digit were all men. Where are the female geeks? Are there any female readers of this mag or are they all busy flipping through some fashion mag?

I decided to write to you guys about it. Seems like my supersonic feminist thoughts were so strong that they broke into the Digit office! The courier guy dropped off the latest issue today, and I laughed out loud when I saw the cover

story: 'Women and Tech'. I can't wait to start reading this issue.

I love Digit, I love what you guys do. Also, I love the fact that you're able to write things in such a way that newbies as well as advanced tech users can understand the articles and enjoy them.

Keep it up. I hope to see more women getting involved. Even if they do not, I don't mind. Digit is awesome as it is, women or no women. Also, as one of the readers pointed out in the August issue, the guys at Digit are smart, witty and as a bonus, handsome! You guys make Digit awesome!

— Nikhila Krishnamurthy

✉ Thanks for the heartwarming letter, Nikhila. Nice to know that you're enjoying the Zenfone, along with the Make in India cover story. Trust me when I say that we've discussed and debated on the acute lack of female geeks topic plenty of times here at Digit. Apart from the societal problems holding back female ingenuity in the country, we feel geek girls are all around us, they just don't know it yet themselves. And a lot of them have great success stories from the past and present. We're handsome in our use of words more than anything else, and we have awesome readers like you to thank for keeping our spirits high!

— Jayesh

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## Inside Facebook's school!

What's Facebook trying to do in the schools of Summit Denali? Find out  
<http://dgit.in/Facehool>

## Passive-Aggressive Pop-Ups

Passive-Aggressive Pop-Up Ads are getting really fascinating ain't they? Find out.  
<http://dgit.in/PopUpsAds>

### LETTER OF THE MONTH

✉ I enjoyed "Indians are hack proof" in the August issue written by Agent 001, and especially liked the light tone he used to justify why.

We readers think Digit is pro-proprietary software. But, Agent 001 urged us to use Linux in "Close the Windows, Open the Door."

In September issue, you reviewed Android flagship phones, but didn't mention prices! How could one compare phones without prices, especially in Best Buy?

Lastly, I want to buy a monitor of 20 inches or 21 inches under Rs.10k. Please suggest the best one in this range.

Thanks.

— *Goswami Prashanta*

✉ Yes, we dropped the ball majorly by failing to publish the prices of the Android smartphones featured in the comparison test – a mistake that's been noticed by a lot of our readers – and we duly apologise for the same. Be rest assured that we merely missed out on printing the price row in the mag table.

So yes, we knew all the prices of the handsets and did take them into consideration while deciding winners (Best Buys, etc). We'll be uploading the prices of the handsets when we upload the story online. For now, visit <http://dgit.in/AndroidPrices> to see the prices of the Android flagships.

We promise to be more careful about these slip-ups in the future.

— *Jayesh*



✉ I read your article on the trip down nostalgia lane and it reminded me of the time I got my first smartphone. I'm only 18 now and didn't grow up in the times of cassette tapes and VCRs. My earliest memories of technology are the boot up sound of Windows 95 and playing Pinball. I still remember the date on which I got my phone even though I've since switched to a newer one. It was really exciting to have a device of my own. I had an account on the desktop at home, but it didn't feel quite as personal as having my own phone, downloading apps of my own choice, rooting it and installing CyanogenMod on it, then getting frustrated with the fact that the custom ROM was causing issues and eventually deleting it. I remember replying to a long email on it for the first time and marveling at how fast I could write an email with the Swype keyboard. I remember reading all the articles about tips to keep your battery healthy and being confounded at all the conflicting advice.

I'm looking forward to the future. Devices like Project Ara, which would essentially help me build the smartphone of my choice, advances in battery technology so that our phones and laptops can

last more than a day without us panicking and running to the power outlet and VR gaming. One of my favorite games is the original Crysis and if I can don some VR gear and mimic the movements of Nomad on the Lingshan islands instead of tapping keys on a keyboard I'll probably pass out from excitement.

I look forward to next month's Digit!

— *Arun Narasimhan*

✉ We're right there with you Arun, we can't wait for the next generation of technology to get here either! Truth be told, that's all we do, actually, we've been looking forward to next gen technology all of Digit's life :-)

— *Agent001*

✉ I'm a big fan of your mags and admire your ideas, concept and content within them. I especially love the DVDs. However, I'm currently facing a problem: the games you provided aren't working. I even installed Steam, but not sure what to do next. The DVD in the August edition contains horror games that are in .zip format. Can you continue to give us other cool games in .zip format?

— *Sandeep Kapoor*

✉ Steam has become a very popular digital distribution platform and even game developers prefer publishing their games on this medium. The zipped games that we usually cover in our DVDs are either demos or indie games that are really fun to play and not available on other avenues. Further, Steam enables you to get frequent patches and updates for the game so that you don't lose out on the latest offerings served by the game.

We'll continue to cover indie games and demos on the DVDs in the zipped format. Hope you enjoy playing the horror games.

— *Abhijit*

✉ I'm 12 years old and quite new to Digit. I came across your amazing mag in my school library, and I just got to say, it's the best tech mag I've ever read. Your book cover and the content in it is literally out of the world! I wish SKOAR! was available only as a magazine supplement.

My friends are glued to your phenomenal magazine because of me. Now whenever I tell my friends that I got the new issue of Digit, they'll swarm around me like a crowd in my class and I only get to read it when the next month of your cool mag is out. If you guys could provide more information about PS3, XBox 360 etc, I'd read your magazine forever. Keep being cool and rocking our geek world.

— *Farhan Subi*

✉ Wow! What a journey it's been, and we're humbled that we have readers who are younger than the magazine itself! We are glad that we are able to stay relevant to the next generation, and we shall certainly take your feedback to heart. Sadly, most of SKOAR!'s writers belong to the PC Master Race, so I wouldn't hope for too much PlayStation and Xbox content. I hope they will at least consider including at least a little more than they do now in honour of readers like yourself.

— *Robert*

✉ I can't believe it's been so many years since you started. Digit was something for me to show off about in the beginning but as time progressed, I became more interested in reading the magazine and not just looking into the DVDs.

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*Zindagi ke saath bhi, Zindagi ke baad bhi.*



## Messenger catches up

Messaging app leads in second position. Here for more: <http://dgit.in/facebookmsg>



## No! Just, NO!

'Vomit Machine' helps researchers study disease, but was the face necessary?  
<http://dgit.in/VMachine>

Anyways, enough of the past. Let's talk about the present. I heard you guys were in need of 'minions'. Well, I would've written this earlier if I had read the last page of SKOAR! Well, let's move on to why I want to join. The answer is actually simple, joining Digit (even as a minion) is a dream come true for me! I've been adoring you guys for more than four years now, and I just love your work so I'm very eager to join Digit! Yes, I'm in Class 11, but I've been the main writer of my school magazine's technology section for the past two years and I love reviewing any gadget that comes in my way! My latest review was of the Mi band. Well, enough boasting about myself.

Now, I have some questions in my mind:

1. How do I join Digit ?
2. How do you guys get gadgets from companies even when they aren't launched?

I have a suggestion: Your DVD layout needs to be changed. But you know that already, don't you? Well, here comes the suggestion. I read a letter in your magazine saying that readers should be allowed to choose the skin they want (Android, iOS etc.). Well, this is actually a wonderful idea. Hope to see this change soon.

On another note, when will the Digit app be out? Whenever it does, make sure you add a "geek quiz" section like in the February 2012/2013 magazine.

And one last thing, please reply.

*-Vibhansh "the Geek" Gupta*

**d** Digit was the same "secret sauce" for most of us too. Something to hide, something to be inspired by, and obviously something that'll give you much needed "show-off" ammo!

Yes, we're looking for minions but you're still in Class 11. I'd suggest you wait until you're at least in your first year of college. We aren't going anywhere ;-)

In the meantime, you can contribute game reviews / write-ups for skoar.in. If they're good enough we'd be happy to publish them under your name.

*- Siddharth*

**✉** Where should i start? The first time i saw DIGIT was at my physics teacher home in 12 th class about 8 yrs ago. I didn't paid much attention to it at that time. Second time i saw it on New Delhi railway station few years ago, I think it was " Go Green Edition". I was just hooked to it. After roaming here and there on platform for 1 hr. I asked my father to buy it. Since then i am a regular reader of it. You have converted me from a boy who barely know how to use M.S Office to a person who now messes with Android OS of my mobile. Now people in my circle come to me if they have any issues with their PC or mobile.

I tried various Magazines but none came close to Digit as far as its contents is concerned. The Fast Track and DVD are icing on cake. The way you manage to present data in magazine is just awesome. The contents related to all fields of technology is too good. The content in magazine sometime is so much that I can't finish the entire magazine. Fast track are best for novices like me to learn something new. Thank you for including poster in SKOAR!. Even though now I am a Plastic Engineer, this magazine has kept me hooked to field of Gadgets and Technology. At last I wish best of luck to all members of Team DIGIT. Keep touching new milestones every time. Best of luck again.

*- Prabhat Singh*

**d** Thank you for your wishes Prabhat, and we send our wishes right back at you. It's readers such as yourself who make us love the job we do, no matter how difficult it gets at times. You don't need to be working in technology to be a geek, and you sir, are a geek. Wear that badge proudly, because we shall inherit the Earth!

*- Robert*

**✉** Is there any way I too can submit my articles to be published in Digit? Please let me know how to do this. By the way, I'm just 15 years old. Am I eligible?

*- Shashwat Gupta*

**d** I know a few 15-year-old kids who write like experienced 40+ year-old writers and some 40+ writers who write like 15-year-old kids. I don't have an answer to your question, because I don't

know whether your writing standard is something we'd want to publish. Suggest a topic, if we like it, we'll ask you to write something on it; then, if we like the result, we'll publish it. If not, you tried, and we'll give you tips on how to improve your writing over the next few years. Either way, win-win for you, so why not?

*-Robert*

**✉** The only reason I subscribed annually to Digit issues is provision of two dual layer discs containing lots of regularly required data in updated forms. And once I paid the annual fees, Digit stopped providing two discs and instead started giving only one DVD. It's really a 50 per cent blow to my data requirement. Moreover, a dmystify has started with the issue. I think it mostly has to do with third world topics, and not much related to the digital world. Though the topics are deep, they don't add beauty to the whole concept of the magazine. And it can't replace a whole dual layer disc. Please restart giving another dvd. It actually saves subscribers from having to download massive amounts of data. This is moreover helpful in India, where internet connectivity is poor.

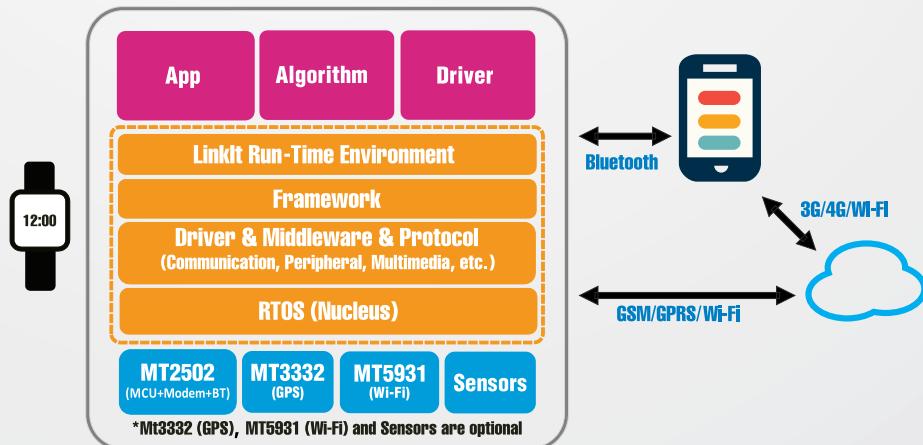
*- Dr. Govinddas Akbar*

**d** I only wish more people would write in to us with this particular suggestion. Unfortunately, so far we've got only a few mails from readers requesting us to return to the two-DVD format. In contrast, we've got several dozens of mails appreciating the new dmystify booklet. Of course, it's not a popularity contest, but this trend is indicative of the impending changes to come. More and more people are getting access to broadband connections that are unlimited and the dependence on DVDs going forward will reduce. We've adapted to this changing landscape and now the one solitary DVD that we offer aims to pack in diverse content. We attempt to provide such a great mix of software, tools and entertainment content that you ideally don't miss the second DVD. The focus has now shifted from quantity to curation and discovery.

*- Siddharth*



## LinkIt™ Architecture





## Asus VivoStick

Intel's Compute Stick managed to gain a lot of attention with the idea of running Windows using an HDMI dongle. The VivoStick is a similar device that supports Windows 10 and is powered by Intel's 14nm Cherry Trail processor, running 2GB of RAM. It houses a 32GB built-in flash storage module. In terms of connectivity options, it has one USB 3.0 port, Bluetooth 4.0 and Wi-Fi 802.11n. The device is priced at around ₹8,500.

DESIRE ➤ SHOWCASE

## iPad Pro

A bigger iPad to use your Apple Pencil

Apple released their biggest iPad ever and it has a huge 12.9-inch display. The iPad Pro is powered by 64-bit A9X chip which has a built-in M9 motion coprocessor. The device has a display resolution of 2732x2048 with 226 pixels per inch, calculating to about 5.6 million pixels. This screen apparently uses the same technology used on the 5K Retina iMac. All of this hardware is packed neatly inside the iPad Pro, but it only weighs in at 1.57 pounds with a thickness of 6.9mm.

The iPad Pro comes installed with a four-speaker audio system that boasts of (finally) balancing the left and right audio. The iPad Pro has

## ➤ GREED

For those who just want more than should be humanly allowed, we have enough to satisfy your hunger...

**THIS MONTH:** Ballantine Space Glass, Devon Star Wars Watch, Ducati Monster 1200 R, Lamborghini Huracan Spyder, Coto Corvus, and more...

## ➤ TEMPTATION

If you're wondering what to do with yourself or how to spend some time getting cultured, this section is for you...

**THIS MONTH:** The Man from U.N.C.L.E., Narcos, Quantico, Humans, Must Read: The Martian, Aftermath, The End of All Things, and more...



accessories to go along with it including the Apple Pencil (something Apple swore never to use, a \*gasp\* stylus!) and Smart Keyboard. The Apple Pencil is a pressure sensitive stylus that can detect position, force and tilt. The

Smart Keyboard is essentially a cover for the device which doubles as a keyboard (like the Microsoft Surface cover). The iPad Pro will be available in the 32GB and 128GB variant costing at \$799 and \$949 respectively.

## Moto 360 (Gen2)

 The next iteration of Motorola 360 smartwatch comes with a whole new design variation and customisation. A new crown, straps hooked to the lugs, water resistant and a heart rate monitor are a few things you get with this one.

## Samsung Gear S2

 The Gear S2 might just be the best smartwatch from Samsung. The circular AMOLED display screen comes with a bezel which can rotate and be used to navigate. Currently compatible with only Android phones.

## Alcatel Go Watch

 The Alcatel Go watch resembles the Casio G-Shock. It is compatible with both iOS and Android. You get two physical buttons on the side, a Go button on the top, a heart rate sensor and a micro-USB port for charging.

## Huawei Watch

 Huawei Watch is the company's first attempt at producing something running Google's Android Wear OS. It's styled well, with a completely circular design, an elegant finish and also the use of an AMOLED display.



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## Acer Predator Tablet 8

The Predator Tablet 8 is a mean looking gaming tablet from Acer. The design of the tablet extends the patterns from the other Predator products. The Predator 8 tablet features an 8-inch screen with a display resolution of 1920x1200 pixels with a wide gamut of colours. The tab is powered by an Intel Atom X7 processor and runs on Android Lollipop 5.1 with 2GB of RAM and up to 64GB of internal memory. The storage can be expanded upto 128GB via a microSD card. The tablet means business when it comes to gaming and to prove that they have installed four front-facing speakers with Dolby Audio. The rubber grip under the tablet proves to be quite helpful while gaming, especially the ones involving motion sensing. The Predator 8 features Acer's Predator TacSense which provides better haptic feedback to give an enhanced gaming experience.

## Merlin Digital Levitating Speaker

Listening to music from your speakers plainly placed on the desk is old school. At least it doesn't sound as appealing as a levitating speaker. Merlin Digital's Levitating Speaker looks unreal as the spherical speaker hovers over the base of the device while playing music. The base encloses a strong electromagnet with four actuation points which balances the levitation of the speaker. The speaker itself consists of either a weight balance or a gyroscope that self-balances the speaker. The sound quality isn't really great and as the volume level increases, the speaker starts emitting a lot of noise. You wouldn't possibly buy this speaker to have a good music experience but probably to goof around with it at your place and with your friends.



## Lenovo Yoga Tab 3

The Yoga Tab series has been successful in offering a great experience of using a tablet without making any compromises on performance and build quality. The successor to the older Yoga Tab 2, the Yoga Tab 3 features a couple of handy features, not seen earlier in other tablets. It follows the same design and build from the previous version and continues with the pop-out kickstand. This tablet holds a pico projector at the central barrel which can project an image of up to the size of 70-inches. The 10-inch tablet has QHD display resolution powered by an Intel Atom processor with 2GB of RAM. The tablet does feel good in the hands and better when held vertically, owing to the barrel design.



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## Acer Predator G6

A fierce looking machine, the Predator G6 is a fully packaged gaming cabinet loaded with all the latest hardware goodness necessary for high-end gaming. The design and build of the cabinet is enough to get your friends drooling over your PC. The high-octane chassis features a Turbo button that instantly overclocks your PC while keeping the temperature way below warning levels. An Easy-Swap Expansion bay lets you switch your hard drives right there. No need of opening up your cabinet and then reaching out to your hard drive bay. The Predator G6 is powered by a 6th Gen Intel Core i7-6700K processor with 64GB of DDR4 RAM clocked at 2133MHz and an NVIDIA GeForce GTX 980 graphics card.

## Acer Revo Modular

The idea of a modular smartphone went so viral that in under a year, the idea was brought to a prototype stage through Project Ara. So does a modular PC stir up the same amount of excitement? Acer's Revo Build is a block-based modular PC, that will let users swap or replace modules easily. The basic module is a small form factor PC running on a low-powered Intel Pentium or Celeron processor with 32GB of storage and Windows 10 installed. Users will have the freedom to stack other modules such as hard drives and connectivity ports right on top of the base module. The components will be connected with each other through magnetic pins, and will not require the use of any tools.



## Asus ROG GX700

The word overkill itself might sound too puny when put up against Asus' newly launched gaming laptop. The ROG GX700 is the world's first liquid-cooled gaming laptop. We can totally understand and imagine the expressions on your face, we had the same reaction. The GX700 features the new ROG color scheme with Armor Titanium and Plasma Copper accents. This ostentatious product is powered by a 6th-generation Intel K-SKU processor coupled with an NVIDIA graphics card. The laptop has a 17-inch 4K display while the other specifications haven't been revealed yet. If the main purpose of a gaming laptop is to offer a system with a good level of gaming performance while maintaining portability, we think the huge radiator stuck behind the laptop simply defeats this purpose.



# Acer Predator 17 and Predator 15

Acer's Predator line has a wide range of gaming products and the Predator 17 and 15 gaming laptops have managed to integrate a great looking design with superior build quality. Both the laptops are powered by 6th Gen Intel Core i7-6700HQ processor and NVIDIA GeForce GTX980 graphics card. It will have 32GB worth of DDR4 memory, and 512GB NVMe PCIe solid state drive storage along with USB 3.1 Type-C ports. The only difference between the two laptops will be in their displays. The Predator 15 has a 15.6-inch screen, available in options between Full HD and 4K resolution. The Predator 17 has a 17.3-inch display, available only in a Full HD variant.



## Godrej NXW 430 ZD-Platina

Godrej's NXW line of refrigerators tries to bring in neat little features to conserve energy and also package smart sensing technologies. Focusing on the philosophy of 'Brighter Living', it brags features like JTRT – Just The Right Temperature technology where you can customise the temperature of its Chiller, Fridge and Pantry compartments. It also features a touch screen on the front door where you can control the temperature, door lock and set preloaded profiles. The refrigerator has a freezer placed at the bottom and the refrigerator is on the top since Godrej believes that you would be using the refrigerator more often than the freezer. The refrigerator has motion sensing technology so the LED lights inside will glow up automatically at specific compartments where motion is sensed. It also features a dual-fan array to spread the cooling evenly throughout. The palladium-based deodoriser placed inside keeps everything fresh and prevents foul odours.

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*Here is where we keep an eye on crowdfunded projects that will make you go 'Shut up and take my money!'*



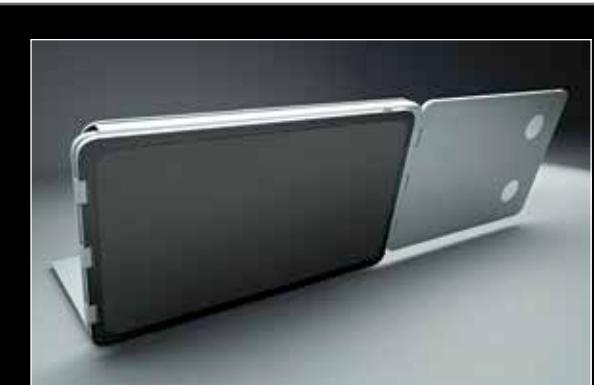
## WonderCube

No one likes to pack a horde of accessories along with them to work or school. Instead of carrying an extra bag for the numerous essentials accessories why not just carry one cube to rule them all? WonderCube is a tiny 1-inch cube functioning as a multi-accessory tool for your smartphone. Do you want to charge your phone? Check. Do you want an OTG USB drive? Check. Do you want to sync your files from your phone to your laptop? Check. Check. Check. All these packed into a cube that can double as a keyring. This little cube also has a micro-suction panel on one of its sides so you can attach it to the back of your phone and have yourself a handy phone stand. This miniaturised version of the Tesseract will cost you \$85.



## Remix Mini

Does the sound of an Android-powered PC stir an interest inside you? Claimed to be the "World's first true Android PC", Remix Mini is a 1.2GHz ARM-based processor, running on a customised version of Android Lollipop called Remix OS. Although this device seems to be more relevant for a streaming device, you can use the Remix Mini for your regular Internet browsing and work focused applications. This device comes in two variants, one with 1GB of RAM and 8GB of storage that costs a mere \$30. The other variant comes with 2GB of RAM and 16GB of storage, costing only \$40. Remix OS comes with a Windows-like taskbar and multi-tasking windows to make the experience reminiscent of a desktop PC. The device sports two USB ports and supports Bluetooth, enabling you to attach a keyboard and a mouse.



## Sliden Joy

Do you like a multi-monitor setup? Even on a laptop? Sliden Joy allows you to add one or two extra screens to your laptop. Currently, this device comes in three sizes of 13-inch, 15-inch and 17-inch, and the company plans on adding more sizes to its lineup. The two screen setup will let you fold the screens around your laptop, so that you can enjoy your shenanigans with your friends seated around you. The screen slab has a display resolution of 1920x1080 and connects to your laptop using one USB 3.0 port or two USB 2.0 ports. The weight of the slabs range between 50-100g depending on the screen size. The cost isn't bad either – the Sliden Joy slab is priced at \$199.

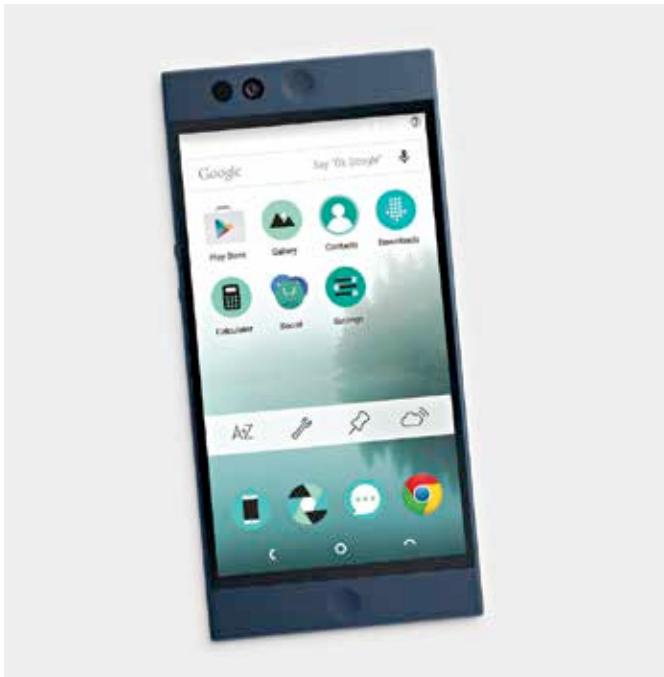
DESIRE

# MOBILE WATCH

*This month we have a phone with an infinite storage, a secondary ticker display and a phone with 4K resolution display.*

## Nextbit Robin

If you thought 464 gigs of storage on the Saygus V Squared was cool, how about a smartphone with infinite storage? Yes, you heard it right. Nextbit is building the Robin smartphone that virtually has infinite storage. How you wonder? Well, for the basic model you get 32GB of physical storage and 100GB of online storage. The customised Android version running on the Robin will intelligently offload the stored data that you haven't used for a while to the cloud. It will optimise and free up space on your phone as it learns your usage. Of course, you can get back your data with a simple tap whenever you need it. The specs on the phone aren't bad. Running on a Snapdragon 808 processor, the Robin comes with 3GB of RAM and has a 5.2-inch IPS LCD display. The rear camera has a 13MP sensor while the front camera comes with a 5MP sensor. The Robin tries to play well with the tinkerer community by offering an unlocked bootloader so that custom ROMs can be installed and still Nextbit will not snatch away the warranty. This cloud-powered smartphone can be bought for \$349.



## LG V10

Joining the list of leaked mobile phones swarming the Internet, the LG V10 features a unique ticker display just above the primary display. As seen in the leaked screenshot by @evleaks, the ticker display solely places shortcuts to apps, probably customisable. We are still not pretty sure what the secondary display will be capable of but if it displays only shortcuts to your favourite apps then it sounds like an unnecessary feature. The V10 is a 5.7-inch phone with a display resolution of 1440x2560 pixels. It runs on Snapdragon 808 processor with 3GB of RAM and holds 64GB of expandable storage space. None of the features on the phone will actually make you want to own the device since we would prefer placing shortcuts on our home screen rather have an additional display bar at the top.



## Sony Xperia Z5 Premium

Someone was bound to stuff a 4K screen into a smartphone. That someone is Sony, with the Xperia Z5 Premium. As far-fetched as it sounds, the debate on whether the human eye can distinguish the pixel density beyond a certain point has been going on for quite some time. A 4K display sounds like overkill to use, and makes us wonder about battery life. The Z5 Premium has a 5.5-inch display, powered by a Snapdragon 810 processor with 3GB of RAM and 32GB internal storage. Not to sound sceptical, but with all those pixels lighting up the screen, it might just generate enough heat to make some popcorn for whatever you're watching.

GREED

## EXAMINED

*Here we look at what's hot in the world. From cars to bikes and everything in between, the stuff on the pages that follow will definitely make you salivate.*



## Aston Martin DB9 GT Bond Edition

**W**hen it comes to cars, James Bond doesn't really require other choices. Aston Martin and Bond have come a long way together and to honour that a special Bond edition of the DB9 GT has been announced. Although this series is focused on the promotion of the upcoming 'Spectre' movie, this model is claimed to be the most powerful production of the DB9

GT segment. This special edition consists of a 2+2 seating configuration, manufactured with an aluminium, magnesium alloy and composite body. The Bond edition is capable of going from 0-100 km/h in 4.5 seconds and it can achieve a maximum speed of 295 km/h. The interiors of the car are loaded with full-grain interior in Obsidian Black with Galena Silver stitching and Argento Grey Welt. The seats are electronically adjustable and include side airbags. This car sadly won't include all of Bond's spy gadgets and definitely won't be able to go invisible but the look and feel of the car is aimed to seem like a replica of the model used in Spectre.

The 6-litre V12 engine generates a maximum power of 540 bhp and also generates a maximum torque of 620 Nm.

## Cotlo Corvus

**T**here are many people who find solace in riding bikes either alone or in groups. Such a temporary phase might be short lived if a car driver happens to be bad at driving, leaving the bike rider in terrible pain and agony. Cotlo has inserted a car-detecting radar system onto their bike called the Corvus so that one can avoid such accidents. The bike sports a backlit OLED display right on top of the handle displaying different types of data such as current speed, distance traveled, calories burned, etc. It consists of a microprocessor that packs a GPS module, Bluetooth module and different types of sensors. The most interesting feature about Corvus is the radar system close to military grade that detects oncoming cars from the rear.



Sometimes, it might be hard remembering where you parked your bike but Corvus will announce its location using the onboard

GPS module. Another cool feature about the bike is the navigational feedback it gives you when you're going to a location.

# Rimac Greyp G12S

**E**lectric bikes can be the perfect alternative to your daily transport, once they are affordable. Launched as a successor to the previous Greyp G12, Croatia-based Greyp Bikes launched the Greyp G12S. There are many changes under the hood compared to the previous version including a more powerful battery pack, new suspension and revised geometry. The G12S holds only one battery module whereas the previous one used to house two modules. The single battery module is capable of offering more power with lesser weight. The 84 V battery can be fully charged in just 80 minutes from a regular household outlet.

You can ride the electric bike up to 120 km on a single charge, and after that you can choose to burn fat by pedalling. In Power Mode, you'll be able to stress the Greyp G12S to a speed of 70 km/h while in Street Mode you'll be limited to 25 km/h (according to European Union laws). The electric bike weighs about 48.5 kg. Greyp is taking orders for the G12S currently with prices starting from \$9,400.



# Lamborghini Huracan Spyder

*Devilishly good-looking*

Lamborghini has a new member joining the family and they are calling it the Huracan LP 610-4 Spyder. The LP 610-4 will be replacing a quite older Gallardo Spyder, and it's similar to the convertible version of the previous Huracan coupe. You don't have to worry, your supercar is not suddenly going to start sucking at matters such as aerodynamics, just because you have no roof. The design looks awesome too, and some of us actually feel the convertible look is an improvement on the coupe. Lambo promise that the car is just as fast and crazy to handle with the top down, and just in case the weather plays spoilsport, the top can be closed in under 18 seconds flat. Of course, you're going to have to slow down to a measly speed of 50 kmph or slower to be able to close the top while moving, but it's better than getting wet.

The LP 610-4 has an aluminium and carbon fibre frame while the outer body is reinforced with aluminium and a composite material. The car is powered



by a V10 that pumps out 449 kW and generates torque up to 560 Nm. You can hit 324 kmph, but if you went that fast no one would be able to see you. Lambo's are best driven at 20, so that everyone knows who you are! If you want to show

off acceleration, or just make the tyres squeal, the LP 610-4 can accelerate from 0-100 km/h in just 3.4 seconds. It will go on sale later this year, but you won't be able to afford it, neither will we, making this whole segment kind of pointless.

GREED

## DROOL MAAL

*A whiskey glass to drink in space and a limited edition Star Wars Devon watch. If this is droolworthy, what is?*



## Ballantine Space Glass

**Houston, we don't have a problem  
anymore**

While orbiting the Earth in a spacecraft, you get thirsty, and they hand you this ugly sealed pouch. This won't do. You didn't make your billions to drink from a packet! Thankfully, Ballantine agrees. Presenting the Ballantine Space Glass, a whiskey glass that has been specially engineered to work in microgravity. The curved design of the space glass fits perfectly in your palm and will ensure that you raise a toast on your next space expedition in style – no matter which way you're facing, and which way is down.

The "glass" in the Space Glass is made of 3D-printed medical grade PLA plastic, mounted over a 10kg magnet (you won't feel the weight in space). As you already know, nothing settles in zero gravity and when it comes to liquids, their behaviour in such conditions is quite funny. The trick behind the Space Glass is the spiral convex base plate creating surface tension to hold the whiskey at the bottom. The resulting reservoir of whiskey is connected to a channel which runs as a helix around the glass up to the rose gold mouthpiece. There's a custom nozzle at the bottom which acts a one-way valve that makes pouring whiskey into the glass an easy affair in microgravity. With so much science integrated into the glass, just drinking from the Space Glass ought to bump up your IQ extensively.

## Devon Star Wars Watch

**This is the watch you're looking for**

If you haven't figured out yet on how to prepare yourselves for the premiere of Star Wars: The Force Awakens, this is your opportunity to completely geek out. American watchmaker Devon has designed a menacing Star Wars special edition watch, destined to leave you star struck. One glance at the watch and you'll definitely agree that this work of art can only be best donned by Darth Vader himself.

The design behind the watch is reminiscent of the TIE Advanced Fighter, featuring a patented system of interwoven Time Belts running on hybrid electro-mechanical power. The watch consists of



350 individual parts and the lens is made of scratch-resistant polycarbonate coupled with bulletproof durability. This watch has stainless steel plating and glass-reinforced nylon belts, a material that was actually used in the original 747 aircraft for gauges. So have you made up your mind already about buying the Devon Star Wars Watch? If you did, you better hurry up since Devon is going to manufacture only 500 units and sell each at \$28,500. Your limited edition watch will be honourably packed inside a Darth Vader TIE Fighter Box along with a pair of TIE Fighter cufflinks.



## Ducati Monster 1200 R

### Rev up the monster

The Monster 1200 R is the most powerful naked Ducati ever built by the company. The new 1200 R version boasts of superbike performance. The 1,200 cc Testastretta 11, twin-cylinder engine generates 117.7 kW with a max torque of 131.4 Nm. The bike is intimidating but beautiful – so basically a Ducati Monster. There are two variants: Ducati Red and Thrilling Black, each available in the respective frame colour combos. Nothing screams passion for biking like a Ducati. So what are you waiting for? Sell a kidney and get one, today!

## Solarwave 62

### Your getaway to an eco-friendly vacation

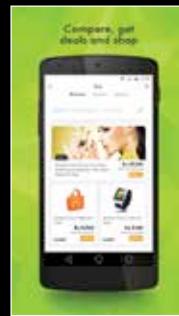
If you're rich enough to buy a yacht, but still care about the planet, this is the yacht for you. The Solarwave 62 is a zero emission, carbon composite hull, 62 foot catamaran.

With a 15 kW photovoltaic array on the roof, connected to a series of 100 kWh batteries, it can power all the household appliances on board. There's a complicated retractable sky roof, a garage, a luxurious compartment housing a kitchen and lounge, and many more facilities. The yacht is expected soon and will cost around 2 to 2.5 million euros. Plan your next luxurious and eco-friendly summer vacation soon.



## APP WATCH

### Lime



Lime is more than just a mobile wallet and ambitiously wants to solve all the conundrum involved in mobile transactions. The app has been created by Axis Bank and they have repeatedly confirmed that you don't need an Axis Bank account to use this app. Lime contains a plethora of features and will indeed enhance your shopping experience powered by graphs of price drops and comparisons. It includes a couple of notable features such as

Lime Pay that lets you make payments with just one tap, and Near Pay that lets you transfer money to other Lime users through sound tones.

**Play Store:** <http://dgit.in/LimeAppAnd>

### ReBoard



ReBoard lets you search from the web, translate to other languages, search images and news, search videos on YouTube, convert units, etc. The interesting feature here is that all the above mentioned actions can be done right inside the keyboard. So, you'll be able to search memes and send them instantly to your friend on WhatsApp without leaving the app. The paid version of the app integrates Dropbox, Google Drive and

Wunderlist. Currently, ReBoard is only present on the App Store and soon we'll see it coming to Android.

**App Store:** <http://dgit.in/ReBoard>

### Little



Apps offering offline discounts have been storming the market lately and hardly anyone has done it right. Simply listing out the retail stores offering discounts isn't quite helpful if you can't discover specific deals pertaining to products across various stores. So, who got it right? A recently launched app called Little is getting there. This app consists of all the regular features such as listing out a directory of the physical stores offering deals and discounts. What Little does best is the discovery part. You can search through different categories such as Restaurants, Hotels, Entertainment, Spas, Fitness and Medical. By adding filters such as price, distance and date, you'll be able to find better deals and discounts according to your preferences. In future updates, we would love to see more categories.

**App Store:** <http://dgit.in/LittleiOS>

**Play Store:** <http://dgit.in/LittleAnd>

**Windows Phone:** <http://dgit.in/LittleWin>

## TEMPTATION

# CRITIQUE

*In this section, we put stuff through the grinder and closely examine what comes out; everything except gadgets, because there's more to life than just that*

## MUSIC

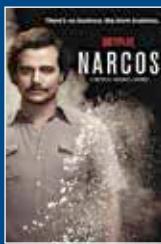
# Forever Young Cover

A good tribute to the old classic

We rarely ever review music covers and the only reason why we're doing this one is because it revisits the old classic Forever Young from the German group Alphaville. The original set such a huge standard in the 80s that it was covered by some of the most prolific musicians of all time. This cover by Hasta Martes featuring Carina Mennitto could be easily accused of being just another EDM remake of a classic but if you give the song a chance then you will forgive yourself for thinking so. The song has been used as a soundtrack across numerous TV series and for

good reason. The appeal of the song can easily be attributed to other greats of the '80s like Depche Mode and other popular synth bands of that era. It topped the charts in most Scandinavian countries but a similar popularity was not achieved across the Atlantic. It would, therefore, be no surprise that the same can be said of the band as well. Aside from a few other not so popular hits the band has done very little over the years. The music video of the song is quite reminiscent of the '80s with band members traversing through diamond-shaped glowing portals. A groove-inducing experience regardless.

- Mithun Mohandas



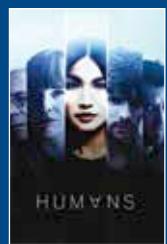
### Narcos

Narcos is a TV series based on the life events of Emilio Escobar Gaviria, also known as "The King of Cocaine". The series is directed by Brazilian filmmaker José Padilha who has also directed the 2014 Robocop remake.



### Quantico

Quantico's storyline is based on young FBI recruits having a past that being the reason to join FBI and after the training how a recruit is suspected of being involved in planning of a terror attack.



### Humans

Humans is a Sci-Fi television series based in the parallel world where the servant "Synth" is a highly developed and advanced robotic servant and yet quite similar to humans. The second series of Humans is coming on early 2016!

## MOVIE REVIEW

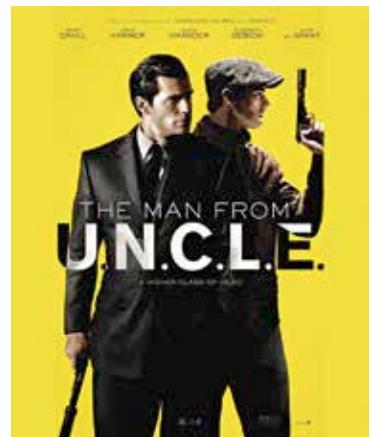
# The Man from U.N.C.L.E.

Guy Ritchie almost gets a spy movie right

If the '60s retro fashion invokes a mysterious feeling of pleasure inside you and coincidentally it turns out you are fond of spy movies as well, you will definitely enjoy the movie. Well, of course expecting stunts in the movie might be too far-fetched but surprisingly Guy Ritchie manages to pull off a decent spy-action movie. The Man from

U.N.C.L.E. is based on a TV show which debuted back in 1964. Although purists must have had complaints, there weren't any disappointments from our side about how well the remake was made since all we cared about was how well the movie was made. Recreating an older era is indeed challenging since you have to explore all the elements of that particular era and depict them in a modern setting.

The plot of the movie seemed quite loose and you wouldn't really be amazed about how the story unfolds through the movie. The reason that kept the movie going was the love-hate relationship between the duo spies with contrasting personalities, as they try real hard to



be better than the other in almost every task. As they wonderfully donned their suits and blazers, displaying how skilled they were, the cheeky and snarky comments keep the movie on a light and humorous note. When you think you're beginning to get bored, considering how smart the director/producer is, you will be presented with an interesting scene that will deceptively pull you back into the movie. Armie puts up a great act, doing complete justice to his character. Hugh Grant makes a surprise appearance and is as British as one can get. Guy Ritchie may have adopted a weak plot but ensured that the entire movie was fun to watch.

- Abhijit Dey

# Things To Do:

## Robot TV (Nostalgia Trip)

### Giant Robot:



Giant Robot, originally a Japanese animated TV series which started in year 1967 titled "Jaianto robo" is based on the storyline where the earth is invaded by an alien interstellar terrorist group and the homeland needs to be defended from the incoming evil.

### Super Human Samurai Syber Squad:



Team Samurai consists of six typical teenagers headed by Sam Collins who fight against the viruses created by the villains Kilokahn and Malcolm Frink. In the TV series, they transport themselves into the computer to

fight these mega-Virus Monsters.

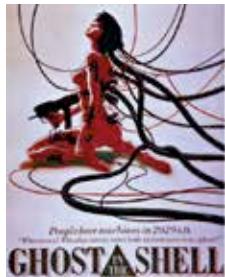
### Mobile Suit Gundam:



Mobile Suit Gundam is an animated TV series from 1979 that is set in a fictional scenario in the year 2079 when a war of independence called the One Year War is launched by Zeon declaring itself independent from the Earth Federation. Their only hope of making it through the war is

a giant humanoid robot, Gundam. This forty-three episode TV Series has also been adapted into two movies.

### Ghost in the Shell:



Ghost in the Shell is an animated TV series that premiered in Japan in 1989 and since then has continued through seasons and various movies. It is based on the futuristic adventures of intelligence agents and their teams in a world which is a mixture of a physical as well as a digital world.

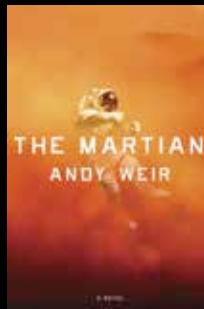
### SDF Macross:



Super Dimension Fortress Macross is an animated television series from 1982 based in the year 1999 when an alien spaceship crashes on Earth and makes the human race aware of other life in space. Ten years later, as the ship is reconstructed on the day of its voyage, an alien race called the Zentraedi make their appearance on Earth thus beginning a space war.

# Must Read

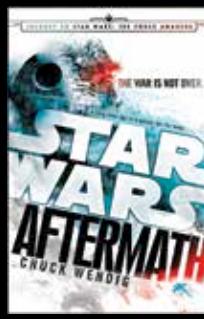
### The Martian



Mark Watney became one of the first astronauts to set foot on Mars. The crew is suddenly forced to evacuate the planet due to a violent dust storm, assuming the death of Mark. Stranded all alone in the Martian planet, Mark doesn't have supplies to last long enough. This is his story on how he puts all his engineering skills to test, taking all it takes to survive.

<http://dgit.in/TheMartianBk>

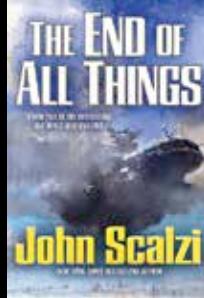
### Aftermath



The Emperor has fallen along with his powerful enforcer, Darth Vader. Tensions start rising as the Imperial factions start conquering territories and keep a tight hold on them. While people enjoy the defeat of the Galactic Empire, a lone Rebel scout has lurked across the systems to land across a secret Imperial meeting.

<http://dgit.in/AftermathSW>

### The End of All Things

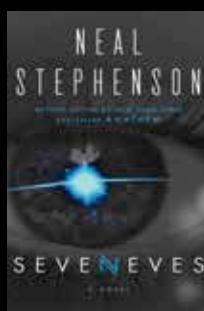


As humans advanced in space exploration, they traveled across the universe to face the numerous alien species dedicated on destroying each other's existence. In order to protect us from such hostility, the Colonial Union is formed which offers the Earth's excessive population for colonists and soldiers. A secret group aims to take advantage of the situation

that could ultimately lead to the extinction of mankind.

<http://dgit.in/TheEndOfAllThngs>

### Seveneves



The earth is closing in on destruction and with an ambitious effort of ensuring the survival of humanity, nations across the globe rally up together to leave the planet. Eventually, only a few survivors remain and five thousand years later they embark on a journey to an unknown world.

<http://dgit.in/SevenevesBk>



# THE BUDGET WAR

With the fight for supremacy in the budget smartphones segment heating up, we decided to put some of the top contenders for your money against each other to see which ones came out on top



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## Budget Smartphones

Souvik Das

[souvik.das@9dot9.in](mailto:souvik.das@9dot9.in)

It has been amazing to see the rate at which the market of budget smartphones has grown. Adding a higher value for your money to smartphones has resulted in numerous smartphone-makers flooding retailer store shelves with a whole host of handheld devices. These include features that were once kept neatly reserved for the most expensive ones. Eight-core processors, multiple gigabytes of memory, increasing amount of built-in storage space and higher megapixel counts in cell-phone cameras have brought

the power to your hands – your right to claim the pocket-sized device that would, five years ago, come in the form factor of, say, a decent notebook.

The price-sensitive segment also happens to be one that is seeing an increasingly high rate of growth in terms of user base, number of new devices, and the advancement in the nature of components that are being included in the handsets being introduced.

Sensing that the time was apt, we decided to take a look at some of the best smartphones that you can purchase within a budget of ₹13,000, and choose the best device in terms of price, performance and my personal



Asus Zenfone 2 Laser

pick out of the nine devices that we put into the pit.

## ASUS ZENFONE 2 LASER

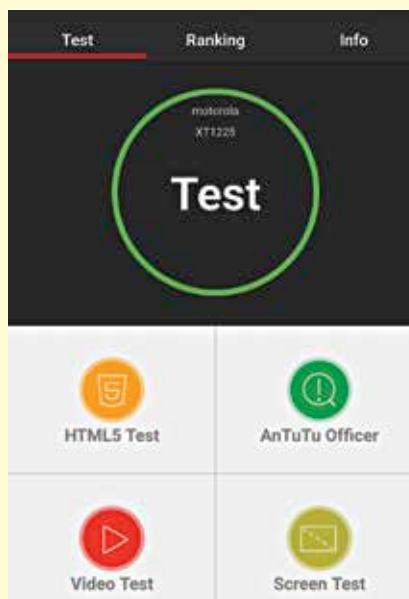
The base proposition of ASUS' extensive Zenfone 2 lineup came across as a competent performer for its price, with the unique proposition of it being the cheapest smartphone providing a laser-assisted auto-focus camera among its repertoire. Bordering on being tagged 'boring' in terms of design, the Asus Zenfone 2 Laser is really not a 'new' smartphone. Instead, it is a stripped-down version of the original Zenfone 2 design, running on cheaper hardware. That's all there is to it.

## HOW WE TESTED

The first and foremost idea was to find out the device which performed the best, given the restricted price bracket. Within ₹13,000, it was okay if low-light imaging was not supreme, or if the build did not feel as suave as it potentially would at a slightly higher price point. But before all that, here's how we tested all phones:

Running the synthetic benchmark tests was the first step in finding out each of these phones' competence on an even ground. Keeping in mind that these benchmark scores are not always the perfect reflection of how a device actually performs in real life, we went ahead with putting them through rigorous usage and performance stress tests – loading multiple applications or games at the same time, comparing them parallelly to see how one fares against the other. We put each phone through its paces in terms of regular apps, calling and messaging, network retention, gaming, audio quality, video-playing, multi-tasking, and power consumption (which also included the amount of memory each consumed for similar tasks).

Performance tests included camera tests. With an increasing amount of photography being done on smartphones, imaging quality renders were of utmost importance. The image tests we conducted were done in a number of lighting situations – dawn, daylight, overcast, studio (fluorescent), tungsten, night, low light



and flash. Image quality of the front camera played a major role, looking at the extent of usage of selfies in social media these days. Video recording tests were done out of fast moving vehicles, fast-moving objects from a stationary point, still objects and low light situations to test noise levels and frame interpolation in the recorded videos.

We then carried out the battery tests, in three ways: first, the synthetic battery

benchmark, second, our custom battery tests, and third, using it until the phones' batteries reached 0%, after normal usage since being charged to 100%. This was essential, as it gave us a complete understanding of the rating of each of the phones' batteries, alongside its real-life performance.

After putting the fundamental tests out of the way, we were left with the aspects of build, durability and design of the devices. It is interesting to note that, although design often comes secondary in the budget segment of smartphones, build quality is still given utmost importance. We put the devices through some rough usage, to see how the ergonomics, compactness, material used, buttons and overall fit. The design and resource consumption of each of the phones' interfaces were taken into account.

Within the price point of ₹13,000, we chose Asus Zenfone 2 Laser, Meizu M2 Note, Lenovo K3 Note, Yu Yureka Plus, Moto G (3rd Gen.), Intex Aqua Trend, Xiaomi Mi 4i, Honor 4X and HTC Desire 526G+ in our extensive shootout. After days of putting them through multiple tests, hours of calling, gaming, video and audio streaming, and countless photographs, here's what came out as the Best Value for money proposition, outright Best Performer and the Editor's Pick – our personal pick of the lot.

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It is powered by a Qualcomm Snapdragon 410 chipset, along with 2GB of RAM and a 3000mAh battery which should last you through a regular day's usage without any hassle. This version of the Zenfone 2 Laser will not get you power-packed performance, and nor should you expect any from it. It packs in 16GB of internal storage, which has become the standard inbuilt memory among most smartphones these days. The 5.5-inch, 720x1280px HD IPS display is large, at best. Colours are not great, not even near to the best in its class. Visibility under direct sunlight is decent, and so are the viewing angles. However, what makes it so average is its colours (or lack, thereof), thereby making the videos appear not-so-sharp. Calling did not face any issues, although extensive browsing faced jitters.

Audio quality, predictably, was nothing to mention. Although the volume level was decently high, the jarringly good quality does not make this the ideal phone to play song out loud at any point of time. The only major aspect which propels the Asus Zenfone 2 Laser is its laser-assisted autofocus mechanism in the 13-megapixel rear camera. Images captured with the Zenfone 2 Laser have good clarity, the shutter is lag-free thanks to a light camera app, and focusing is really fast and smooth. The laser-assisted focusing aids while shooting moving objects - enabling swift focus tracking and fast adjustment of focal depth.

The Asus Zenfone 2 Laser may not be the best phone in terms of overall performance (certainly not prolonged gaming) and display clarity, but the camera unit is one of the best within sub-10k smart-

**Meizu M2 Note**

phones, and hence gives it a strong point of contention in the crowd of smartphones within its segment.

**MEIZU M2 NOTE**

The Meizu M2 Note, above everything, is a really well-built and good-looking smartphone. While it might not have set new benchmark scores in the tests, the competence with which it handles regular and heavy tasks together is really commendable for a smartphone priced at only ₹9,999.

It is powered by a 1.3GHz MediaTek MT6753 octa-core processor, teamed up with 2GB of RAM and a 3100mAh battery pack, which gives a commendable stamina of more than a day's average usage time. Among its many highlights, the one which strikes first is the 5.5-inch, 1080x1920px Full HD IGZO panel display, which is

crisp, sharp and show up rich colours with aptly optimised colour balance. It rightfully takes the title of having the best display among the smartphones in our comparison here, in terms of detailing, viewing angles and direct sunlight visibility.

In terms of performance, the MediaTek chipset delivers brilliant performance in terms of multitasking, gaming and all regular tasks. You can, for instance, easily stream audio online, stay connected to wifi, update applications in the background and surf through two social media feeds at the same time, without the hint of a stutter. Meizu has struck the right balance of optimising its processor power to make the most of its battery, too. Our battery test revealed a stamina of 8 hours, although regular usage easily gave more than that. It lasted for more than a day on average, and thus makes the deal even better in terms of performance. You can actually use applications that the phone can run, without having the worry of a dying battery at the back of your head.

**Lenovo K3 Note**

The 13-megapixel camera sensor, that is used in almost every cellphone nowadays, delivers crisp images with true-to-source colours. The only point where anything negative can be pointed out is the somewhat low volume levels, both in-call and speaker. While putting on headphones deliver relatively decent audio quality, it is not the best you would come across. Overlooking this, the Meizu M2 Note barely puts a foot wrong anywhere, making it a standout performer in this budget segment.

**LENOVO K3 NOTE**

Lenovo's much-successful K3 Note had to make an appearance in this list, and how! It broke all the benchmark scores for its price segment in our tests, and with the reputation and popularity that it has gained so far, it was quite expected. What followed, was not.

The K3 Note is powered by MediaTek's MT6752 octa-core SoC, clocked at 1.7GHz, along with the standard 2GB RAM-16GB ROM combination. While regular usage like calling, messaging, internet surfing and casual gaming are seamless, the Lenovo K3 Note surprisingly fell apart when we played Asphalt 8 on it, and the same happened with Marvel: Contest of Champions and CSR Racing. There are no heating issues at all, but the performance throttle that we found came as a sharp contrast to the sky-high benchmark scores that the K3 Note returned. There is no doubt that it is a formidable device when it comes to regular usage, and it is a really competent device at that, but with Meizu's M2 Note setting the tone for streamlined performance built into a brilliant, overall package, it is hard to justify Lenovo's budget maverick for its gaming stutters.



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**Budget Smartphones**

Moving on, the display is bright and sharp, and overlooking a minimal shift of hue on the 5.5-inch, 1080x1920px Full HD display, it looks quite good. Sunlight visibility on the K3 Note, however, is not great, owing to its glossy, reflective screen. Even at the highest brightness, the K3 Note's mirror-like front facade hinders usage under direct sunlight. The K3 Note's sturdy buttons relay satisfying feedback, although the lack of screen protection might be a serious concern for many. Image quality out of the 13-megapixel camera does not beat Meizu, but is still good enough for the casual photographer in you. What feels good about the phone is its smoothness, the light UI

aiding its cause of being one of the best smartphones built for the mass, who might not need the ultimate gaming experience out of a device that costs ₹9,999. Battery life is a standard full-day real-time usage. With the entire package, the Lenovo K3 Note might have been an equaling contender to the Meizu M2 Note, had it not fallen apart when it came to heavy applications and performance.

### YU YUREKA PLUS

The Yu Yureka Plus is a revised rendition of the original Yureka, featuring Qualcomm's Snapdragon 615 octa-core SoC, 2GB RAM, 16GB ROM, 2500mAh battery, and a 5.5-inch screen size. It received upgrades to its display, camera sensor and the



Yu Yureka Plus

Cyanogen ROM. It has a 5.5-inch 1080p Full HD display, a Sony IMX214 13-megapixel primary camera, and CyanogenMOD 12S, over the previous Yureka's 720p HD display, Sony IMX130 image sensor and CyanogenMOD 11.

The build, while not being the most attractive, exudes confidence against probable drops. It has a matte rubber back which facilitates grip. With the upgrade to its display, the Yureka Plus now has a better screen quality in terms of colour and clarity, although brightness levels are still considerably dim. Viewing angles are good, but sunlight visibility is impaired due to the lack of brightness of the display. Performance-wise, you will be reasonably satisfied with its smoothness in browsing

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	ASUS Zenfone Laser	Meizu M2 Note	Lenovo K3 Note	Yu Yureka Plus	Moto G (3rd Gen.)	
Price	₹9,999	₹9,999	₹9,999	₹8,999	₹11,999	
Performance (on 100)	58.8	69.3	80.3	68.3	54.5	
Specs (on 100)	82.7	89.4	90.3	88.1	81.3	
Design and Usability (on 100)	70.5	86.2	69.8	70.6	75.8	

## SPECIFICATIONS

Display	5.5-inch 720p	5.5-inch 1080p	5.5-inch 1080p	5.5-inch 1080p	5-inch 720p	
Processor	Qualcomm Snapdragon 410	MediaTek MT6753	MediaTek MT6752	Qualcomm Snapdragon 615	Qualcomm Snapdragon 410	
RAM	2GB	2GB	2GB	2GB	2GB	
Storage	16GB	16GB	16GB	16GB	16GB	
Battery	3000mAh	3100mAh	3000mAh	2500mAh	2470mAh	
Rear Camera	13-megapixel	13-megapixel	13-megapixel	13-megapixel	13-megapixel	
Front Camera	5-megapixel	5-megapixel	5-megapixel	5-megapixel	5-megapixel	

## SCORING

Performance						
AnTuTu	23707	31780	46261	34239	24690	
Geekbench 3 Single Core	483	551	811	660	490	
Geekbench 3 Multi Core	1487	2668	4030	2310	1426	
GFXBench Manhattan	113	260	375	342	237	
3D Mark Unlimited	4360	6209	8679	7583	4458	
Camera (rear, overall quality)	4.25	4	3.7	3.25	2.75	
Camera (front, overall quality)	4	4	3	3.7	3	
Gaming performance	3	4	2	3.7	3	
Browsing performance	3.5	4.5	4.5	4	3.5	
Call Performance	3.5	3	4.5	4	4	
Battery life (in hours)	8.3	7.7	8.3	7.1	11.1	
Audio Quality	4.5	4.5	3.75	3	4	
Video playback	4	5	4	3.5	4	

## Design and Usability

Design and Usability						
Looks	3	4.5	3.5	3	3.5	
Build Quality	4.2	4.2	2.7	3.8	4	
Screen Quality	3.5	4.9	3.6	3.5	3.6	
Touch performance	4	3.5	4.5	3.5	5	
Interface design	3.5	4	3.75	3.5	3	
Ergonomics	2.5	4	4	4	4	

## Features

Features						
Display PPI	267	403	401	401	294	
Display type	IPS-Panel LCD	IPS-Panel LCD	IPS-Panel LCD	IPS-Panel LCD	IPS-Panel LCD	
Front Camera/Rear Camera (1/1)	2	2	2	2	2	
Rear Camera resolution (in MP)	13	13	13	13	13	
Expandable Memory (Y/N)	Yes	Yes	Yes	Yes	Yes	
4G (Y/N)	Yes	Yes	Yes	Yes	Yes	
OS	Android v5.0	Android v5.0	Android v5.0	Android v5.0.2	Android v5.1.1	
Battery rating (mAh)	3000	3100	3000	2500	2470	
Thickness (mm)	10.8	8.7	8	8.5	11.6	
Weight (in gms)	170	149	150	155	155	



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## Budget Smartphones



OCTOBER 2015

Intex Aqua Trend	Xiaomi Mi 4i	Honor 4X	HTC Desire 526G+
₹9,990	₹12,999	₹9,999	₹9,599
60.5	76.6	61.7	62.6
84.8	85.7	81.0	59.3
72.3	80.9	71.4	64.2
5-inch 720p	5-inch 1080p	5.5-inch 720p	4.7-inch 540p
MediaTek MT6735	Qualcomm Snapdragon 615	HiSilicon Kirin 620	MediaTek MT6592
2GB	2GB	2GB	1GB
16GB	16GB	8GB	8GB
3000mAh	3120mAh	3000mAh	2200mAh
13-megapixel	13-megapixel	13-megapixel	8-megapixel
5-megapixel	5-megapixel	5-megapixel	2-megapixel
26507	39741	20384	33694
624	713	478	428
1797	2764	1445	2160
357	351	238	393
4997	7538	4377	7152
3.1	4.1	3.6	2.9
2.75	4	3.75	3
3.75	3.5	3.5	3.5
3.5	3.75	3.75	3.5
4	4.5	4	3.5
9.1	9.1	20	7.1
2.5	3.5	3.25	3.5
3	4	3.75	3.5
3.5	4	3.75	3.5
3.8	3.9	3.8	2.7
3.7	4.2	3.4	3.2
3.5	4	3.75	3
2.75	4	3.5	3.5
4.25	4.25	3	4
294	441	267	234
IPS-Panel LCD	IPS-Panel LCD	IPS-Panel LCD	IPS-Panel LCD
2	2	2	2
13	13	13	8
Yes	No	Yes	Yes
Yes	Yes	Yes	No
Android v5.1	Android v5.0.2	Android v5.0	Android v4.4.2
3000	3120	3000	2200
8.9	7.8	8.7	9.9
152	130	165	154

and other regular tasks (Cyanogen's smoothness coming into play here). The shutter is not as fast as Meizu's camera unit, but will not cause any notable hindrance. While regular photographs with the rear camera come decent at best, the front camera is notably better, adept at taking self-photographs, sometimes even in dubious lighting conditions.

You should not expect long hours of heavy gaming or continued photo/video editing tasks with other background tasks running, as the Yureka Plus tends to start lagging in such scenarios. It is best adapted to take care of your everyday needs, with light to medium usage.

We did not face too many heating issues with the phone, although long duration usage does throttle the processor. You will definitely need to charge your battery at the end of an average, 10-12 hours day at work. The Yureka Plus is certainly not the best device in the list, but is a good offering, considering that it is also the cheapest among all of the devices. For its price point, it offers average performance in multiple aspects, along with the added prowess of Cyanogen, which would attract a large number of users.

## MOTOROLA MOTO G (3RD GEN.)

The Moto G is no longer the ace budget smartphone - a segment which it can claim to have initiated. Unfortunately, it has since become a device which Motorola has been trying to sell based on its customer services, amplifying the fact that there are multiple better smartphones out there today.

The Moto G (3rd Gen.) is powered by a Qualcomm Snapdragon 410 SoC, along



Moto G (3rd Gen.)

with 2GB of RAM and 16GB of internal storage. The 5-inch 720p HD display is not bad, but that is how far it goes. Its 13-megapixel camera almost feels like a forced upgrade, and is distinctly second-rung in front of the other cameras in this segment. Moto has tried to offer more with it, adding water resistance to the device. Moto claimed that it can survive upto 30 minutes inside three feet of water, and our water stress test did find it to be true. Although, a notable point in its water resistance is that the device is not usable under water, and the protection works only to save it from accidental liquid damage.

Its performance benchmark tests predictably turned out lower scores, echoed by its actual, real life performance. While regular tasks run okay, they are not as fast as they seemed on the Meizu M2 Note or the Lenovo K3 Note. The device has an amply-powered battery, lasting more than 11 hours in our battery test. It has a textured back panel which emanates a rugged feel which actu-



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ally feels comfortable in hand, but sadly, these aspects almost always take the second level of importance, with the primary focus being performance and camera, where it simply isn't a match for the other smartphones in the segment.



Intex Aqua Trend

Motorola's reliance on trying to offer more than just performance has led to a smartphone that falls behind most smartphones in terms of speed and ease of usage. While the water resistance might come handy in certain scenarios, it is something that many will agree to live without, in exchange of a stutter-free phone experience.

### INTEX AQUA TREND

The Intex Aqua Trend is a decent-looking smartphone, when you unbox the device. Moving on from the point, there is nothing supremely commendable about it. Its build feels cheap, although its compact form factor feels easy to hold in hand. The 5-inch, 720p HD display is not bad,

featuring decent colours which are a tad on the oversaturated end. Nevertheless, viewing angles are good, and even the device buttons feel sturdy, so it does make a pleasant device within the price bracket, overlooking the cheap build and a failed attempt to emulate HTC's design language.

The interface is where it looks somewhat tacky. The icons are rather chunky, reminiscent of the very first smartphones that attempted in packing in premium features to a cheap clamshell. It is powered by a 1.3GHz MediaTek MT6735 quad-core processor, along with 2GB of RAM and 16GB of internal storage, bringing it at par with most of the devices in this segment. Gaming on it is reasonably smooth, although long usage will lead to stutters and slight heating of the device. Network retention was good, and calling and other essential tasks did not face any notable hitch. Battery life was decent, churning out a stamina result of 9 hours on our tests, and lasting more than a day in one full charge cycle.

The audio quality is really poor, and that, coupled with the amateur interface and poor build quality takes the Intex Aqua Trend out of contention. While it still remains a choice that is remotely worth being considered (looking at Intex's major distribution to offline stores in tier-2 and tier-3 cities in India), it is simply not in league with the rest of the smartphones in this shootout. A good, commendable attempt at bringing budget-scale performers to wider Indian audience.

### XIAOMI MI 4I

The Xiaomi Mi 4i commands the highest price tag among all the smartphones in this seg-

ment, and hence, had some justification to make for a price of almost ₹3,000 higher than the average price here.

The Xiaomi Mi 4i runs on a Qualcomm Snapdragon 615 SoC, along with 2GB of RAM and 16GB of internal storage. It has been a proven performer - a proven powerhouse in this segment. There are no performance qualms in terms of regular usage, gaming or any type of heavy usage. The 5-inch, 1080p Full HD display is one of the best in this segment, with crisp, warm colours that are true to the original source. Audio quality is pristine in comparison to the other cellphones in this category, and its 13-megapixel camera is stellar.

Additionally, Xiaomi has further extended its support for the Mi 4i by launching its latest ROM, MiUI 7, based

on the device. The Mi 4i feels good to hold, the UI looks and feels premium, and the overall experience, for us, is worth paying the premium. In a world of smartphone featuring bigger screens by the day, the Mi 4i does stunningly well in retaining the compact form that a smartphone should ideally have, according to us.

You will not face any major battery issues, which will last you through the day. The Mi 4i is also the lightest device among the nine featured here, adding more to ergonomics. Like Meizu, the Xiaomi Mi 4i has a balanced, compact performance and usage trend, which fuses good, suave design with good performance and a decent, growing after-sales service by Xiaomi.

Defending the price tag? We feel so.

### HONOR 4X

The Honor 4X runs on Huawei's HiSilicon Kirin 620 1.2GHz octa-core SoC, with 2GB of RAM and 8GB of internal storage. Although additional storage support is present, more insistence by applications to run on the inbuilt memory may mean that you might soon run out of storage space on your internal memory.

Performance by the Honor 4X is reasonably decent - gaming experience is smooth barring a few stutters after continued gaming or heavy usage crosses the 30-minute mark, and browsing is, as expected, flawless for the most part. The best thing to note about the Honor 4X is its robust battery stamina, returning 20 hours of battery life in our battery test. The 5.5-inch, 720p HD makes up for the lack of Full HD resolution by delivering decent colours, viewing angles and visibility, thereby not making us



Xiaomi Mi 4i



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## Budget Smartphones



Honor 4X

crib about lack of sharpness in the display. The touch response on the Honor 4X is smooth too, making it fairly easy to use.

The size of the device, however, does not facilitate convenience in using it. Additionally, it is among one of the heaviest of the lot. Looking at slimmer, lighter alternatives in the segment which provide equal or better overall performance, the Honor 4X makes considerably lesser sense, even with a good camera quality and best-in-class battery stamina.

### HTC DESIRE 526G+

The HTC Desire 526G+, despite being the smallest of the lot, fails to hold its compactness as leverage for competing with the rest. On paper, it runs on a MediaTek MT6592 1.7GHz octa-core processor, with 1GB of RAM, 8GB internal storage, a 4.7-inch 540x960px IPS display, and a 2200mAh battery pack.

The low-display resolution appears downright dull (this

is the only device that has a sub-HD display), and it doesn't come out as a device ideal for gaming, owing majorly to the rather disappointing visuals when compared to the other devices here. Browsing and other lighter tasks do not face any significant stutters, but the device begins showing signs of stress when multiple applications are being run simultaneously. The battery test returned battery life of a little more than 7 hours, and real life usage barely made it last up to one day. One major hindrance here is that it is downright difficult to view content on the screen in broad daylight, owing to the lack of brightness and a reflective screen.

The HTC Desire 526G+ also happens to be the only phone within this shootout that does not have 4G capabilities. With its numerous limitations, it makes almost no sense to bank on an established brand based only on ergonomics and just decent overall performance.

### BEST BUY: Yu Yureka Plus

While the Yu Yureka Plus does have its limitations, it is still the cheapest offering in the segment, and offers comparable performance output when compared to the other, best-performing devices in this segment. It handles regular usage with ease, runs most of the games well until a certain point of time, and is an overall good device, that just about beats the Meizu M2 Note in terms of value for money. While the Asus Zenfone 2 Laser is also a considerable proposition, looking at its laser-assisted

autofocus feature, the Yu Yureka Plus makes for a better overall device that takes decent photographs, albeit with a slightly slower focusing mechanism that does not hinder usage too much.

At ₹8,999, the Yu Yureka Plus is the best value for money within the segment of smartphones priced under ₹13,000.

### BEST PERFORMER: Meizu M2 Note

The Meizu M2 Note had a reasonably clear upper hand here, after narrowly missing out on being the device with the best value for money. To enhance the first impression of a buyer, the Meizu M2 Note comes with a minimum number of essential apps installed, thereby completely removing the concept of bloatware from the device. Multitasking, prolonged gaming and extensive messaging and browsing were flawless, and that, coupled with the strong battery life, makes the Meizu M2

Note a device that is even worth competing against smartphones of a higher price bracket.

It also happens to feature the best display in its class, overshadowing the Lenovo K3 Note that set a number of synthetic benchmark scores, but fell behind in real life. And, although audio quality is not the best, it is decent to provide you with satisfactory audio quality through your favourite pair of headphones, and honestly, how much do we listen to music on a smartphone's in-built speaker, anyway? Priced at ₹9,999, it is our Best Performer of the lot.

### EDITOR'S PICK: Xiaomi Mi 4i

The Xiaomi Mi 4i comes mighty close in matching the Meizu M2 Note's performance prowess, but loses out on account of its heavier UI load, and Meizu's uninterrupted speed and ease of usage. However, the Mi 4i is undeniably convenient to use,

and features an equally good display. Additionally, Xiaomi's MiUI is a more advanced custom ROM over Meizu's Flyme OS at the moment, giving a number of customisability options to the user. This, coupled with the aspect of Xiaomi's wider presence in terms of service and consumer fulfilment, along with a wider availability of accessories, make the Mi 4i justify its price.

The Xiaomi Mi 4i is a suave, compact device that is ergonomic - lightweight, with a crisp, 5-inch Full HD screen that is crisp enough to view content, and just about the right size. It is this balance between power and petite, that sees the Xiaomi Mi 4i, priced at ₹12,999, take away our Editor's Pick for the sub-13k smartphone segment. 



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## TAIWAN GAMING BRANDS EYE ON INDIAN BULLISH FUTURE

### THE GAMING INDUSTRY IN INDIA IS GROWING STEADILY, SAY EXPERTS POINTING TO BUOYANT PROSPECTS

**TAIWAN EXCELLENCE GAMING CUP 2015** Commences its 2nd Edition in India. This year's competition is even bigger and better. In August 2014, the Taiwan Excellence Gaming Cup – one of the biggest DOTA 2 tournaments – debuted in India to a stupendous response from gaming enthusiasts and saw the winners take home a whopping Rs.2 lakh in prize money. This year, the contest was back with an even bigger bang – the reward as well, as the scale has been doubled due to its stunning popularity last year. This year's event attracted eleven of the most popular brands from the digital world as sponsors. It was sponsored by ADATA, ASUS, ACER, BenQ, D-Link, FSP, Gigabyte, GX, MSI, Thermaltake and Transcend. The Cup is one of the few gaming tournaments in the country to have utilized such uber-cool brands to collaborate and bring something special for the players.

More than 500 gamers, a spirited audience, high-end gaming gear and a heavily charged atmosphere marked the grand finale of the second Taiwan Excellence Gaming Cup that took place at Infinity Mall, Malad on September 18<sup>th</sup> and 19<sup>th</sup>.

The winner team 'Team Neck Break' walked away with a whopping INR 1,70,000 as a cash prize at one of the most awaited and biggest DOTA 2 Gaming Championship in the country. 'Team Elunes' won the second place and took home INR 90,000, and 'Team Bad Xcuse' secured the third spot and received INR 40,000 as prize money.

After the stupendous success of the event last year, this year, the gaming festival was back with its second edition with double the prize money and even bigger fun. This year, a total of 203 teams registered for the event out of which 64 participated in the elimination rounds held in Mumbai and Delhi each. The number of teams registered was almost double from that of last year with players coming in from Shillong, Pune, Kolkata, Hyderabad, Ahmedabad and Bangalore to participate in the contest in Mumbai. While last year the Cup had been held only in Mumbai, this year, Delhi too was added to the venue after a tremendous response to its debut version.

A total of 8 teams, 4 in Mumbai and 4 in Delhi qualified for the grand finale which saw an impressive display of high-end gaming gear as well as some of the latest lifestyle products from Taiwan Excellence, including sleek tablets, smartphones, gaming

technology, leisure-related and travel products.

The participants, as well as the crowd, consisted of avid gamers and techies. All of which were overwhelmed at the magnanimity of the event, which is now considered to be one of the few gaming events in the city of such international repute. The event was streamed live on Twitch TV.

Speaking of the tournament, Mr. Micheal Lin, Director of the Taipei World Trade Centre Liaison Office in Mumbai, said, "The popularity of the maiden edition of the Taiwan Excellence Gaming Cup was so high that this year we scaled up the event to include even Delhi in the venues. The response we received for our second edition too has been massive. We are glad to bring in this championship for passionate gamers because we believe it gives them an opportunity to showcase their skills as well as offer them a chance to win big money."

Mr. Lin added that since India does not have many gaming tournaments, the Taiwan Excellence Gaming Cup strives to give passionate gamers a chance to realize their potential and encourages them to take it to the next level.

Echoing Lin's thoughts is Mr Sunil Grewal, a Director at Gigabyte Technology (India) Pvt. Ltd, one of the key sponsors of the Taiwan

Excellence Gaming Cup. Mr Grewal said, "A few years back, gaming was just a private affair in India. But slowly we are seeing gaming events of such big scale like the Taiwan Excellence Gaming Cup being beamed live online, with a highly dedicated audience who wait impatiently for the occasion. This is the reason why the gaming industry in India is slowly but steadily becoming a competitive spectator sport."



Mr Sunil Grewal,  
Director, Gigabyte Technology  
(India) Pvt. Ltd



**Rajeev Singh,**  
Country Head, BenQ

Rajeev Singh, Country Head of BenQ, another sponsor, said, "We do need more events like the Taiwan Excellence Gaming Cup because in India. The gaming industry is still in its nascent stages. Especially competitive gaming, is yet to pick up because of a lack of good tournaments. We are happy to be associated with the Taiwan Excellence Gaming Cup because it is a great opportunity for gamers."

Mr. Rounak Sen, Captain of the winning team Neck Break, said, "Winning felt good, as it had a good prize pool. It felt great to be a part of TE Gaming Cup. The entire set up of the event was very grooving. We are looking



**TEGC 2015 Champions - Team Neck Break with the champions trophy**

forward for TE Gaming Cup 2016".

Mr. Bari Anwar Nasir, Captain, Team Elunes, 1<sup>st</sup> Runner Up, said, "The event was one of the best gaming event in India. Our team participated last year too but this year the amount of brand pool was very nice. Such events help the gaming enthusiastic to sharpen their skills and showcase their gaming talents. Looking forward for TE Gaming Cup 2016".

Mr. Rohan Gokhale, Captain, Team Bad Xcuse, 2<sup>nd</sup> Runner Up, told, "The event was very well organized and we look forward for more such events in India. Besides the case prize there were also other prizes which were really very good".

Standing firm as the 19th largest economy in the world, with a well-developed capitalist economy, Taiwan has proven itself to be a major player in the market. Taiwan not only has developed into a hub for tech, but is also more familiar than Japan and Korea with classic martial arts themes and the aesthetics favoured by the 100 million online gamers in China. With events like the Taiwan Excellence Gaming Cup, Taiwan is looking at finding a firm footing in the Indian gaming market.

### **Gaming in India in the days of yore:**

The gaming industry in India has come a long way from the era of Super Mario Bros to such high-end gaming extravaganzas. According to a FICCI-KPMG report, the Indian gaming industry, which was worth \$171.66 million in 2010 is expected to grow at a compounded annual growth rate (CAGR) of 32.1% through 2015. But to understand its journey to this stage of development, the history of gaming in India needs to be looked at closer.

India was first introduced to gaming by Samurai India when it brought in the licensed Nintendo Entertainment System clones. Although not very affordable, they did become a hit and their loyal base of customers referred to them as the 'TV Game'. The middle class found its gadget in the form of relatively, widely produced and unlicensed '100000 games in 1' cartridges and the green chips with black spots in the middle were a common site around the television.

### **Gaming by the numbers:**

In 2013, the Indian gaming industry was worth US \$250 million, which at the time did not account for even 1% of the annual global market. But if someone had decided to dismiss the fate of the industry based on numbers alone, they would have been mistake as the industry has been growing rapidly.

According to Arnold Su, the National Sales Manager for the Consumer PC business at ASUS India Pvt Ltd, "The gaming industry in India today is pegged at \$890 million in size as per NASSCOM, with at least two companies coming up every month

and growing at around 30 percent every year. India, being a cash savvy society, is still not very comfortable with the idea of paying for gaming. Despite that, the industry has grown exponentially over the last few years and will continue to do so"

The last 15 years has seen a seminal change in the economic pace of in India. The country now has a robust demographic structure that in turn is offering immense potential for the gaming industry. A blend of rising urban incomes, education, development of the IT sector and telecom

growth have offered the perfect platform for the gaming industry. As Sunil Grewal, a Director at Gigabyte Technology (India) Pvt. Ltd mentions, "The popularity of gaming is fuelled mainly by the consumers' growing attraction for leisure gaming activities and also the rise in disposable incomes. The growth of Internet connectivity has already added to popularity of gaming, because this gives the gaming enthusiast a platform to know and see what's happening in other parts of the world."

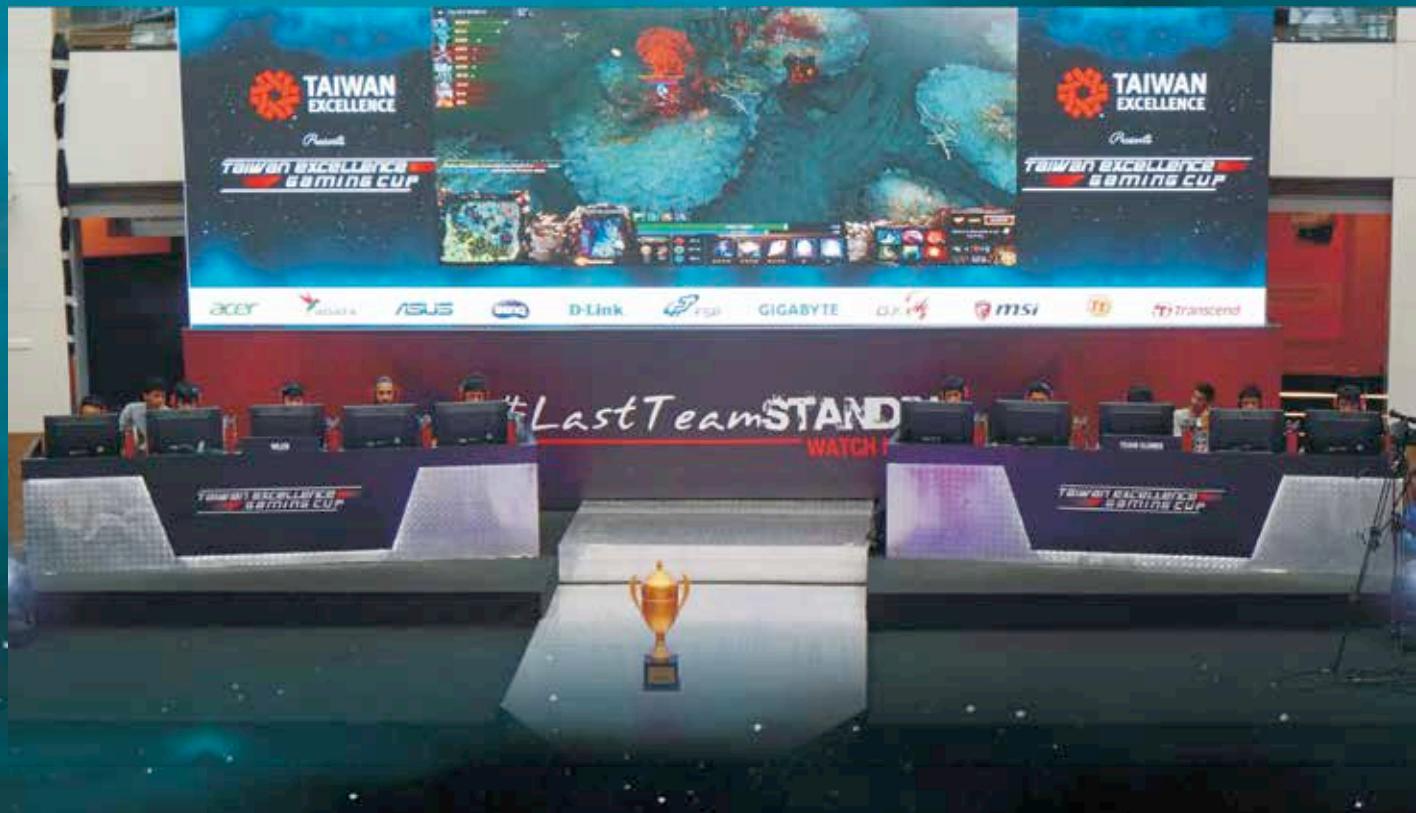
### **The 'Game' of games:**

While casual gaming is prevalent in most parts of the country, it is competitive gaming that is still in its nascent stages. Mr. Singh blames the lack of a well developed ecosystem in India for this. "The ecosystem for gaming is not that well developed in India. Most people take up gaming as a hobby and it is tough to take it up as a profession because there are not many gaming tournaments. There is no big prize money on a regular basis. Most of the gamers do it because they are passionate about it. Competitive gaming is in its very early stages here. But it will develop."

Tournaments like the Taiwan Excellence Gaming Cup are competitions that may be responsible for further developing the market, especially because of the big bucks and extensive opportunities they offer. The Cup came back for its second edition in August this year. After the overwhelming success of the contest last year, this time Delhi too was added to the venue along with Mumbai. From a cash prize of Rs 2 lakh last year, this year a whopping Rs 4 lakh was up for grabs.

Mr. Grewal is optimistic about such tournaments, "A few years back, gaming was just a private affair. But nowadays, you see gaming events being streamed live online, with a highly loyal audience who waits impatiently for the event. It's slowly but steadily becoming a competitive spectator sport."

In fact, according to the Internet Advertising Bureau, women make up 52% of gamers, and while many may think that gaming is something kids or teenagers do, the truth is that over half the gaming population is 30 or above. E-commerce is perhaps playing a role here. Says Mr. Su, "E-commerce has given the gaming industry a huge boost. In fact, e-commerce has helped take hardcore game distribution to more than 220 cities. This, in turn, is helping the brick-and-mortar format of game retailers to flourish, since they now have a ready base of customers who are exposed to gaming."



The gaming segment in India is experiencing a radical shift.” Brands are jumping into the fray as Mr. Grewal says, “You also find a lot of companies that manufacture gaming components, gear and software supporting gamers financially, while also offering lucrative platforms to play and win handsome prizes.”

#### Gaming far and wide:

Recently there were reports that gaming is picking up even in the small towns of India. A tabloid carried a story about a cyber cafe in Ichalkaranji, a town near the Maharashtra-Karnataka border, where the popularity of gaming is hitting the roof. The cafe owner was quoted as saying that when they first started gaming at the cafe six years ago, the popular games were single-player ones like Age of Empires or Grand Theft Auto: Vice City, but with internet speeds improving over the last two years, almost everyone now plays online games like DOTA and Counter-Strike.

Of course, this could be a one-off case because it is not easy for cyber cafes to survive in India. Mr. Singh explains, “It is difficult

that they charge the customers cannot be too high. Since returns are not too high, it could be tough for them.”

#### Big games, big money:

But with an enormous youth population and rapidly growing broadband internet penetration, many market analysts predict that India is en route to become a considerable gaming market. Brands too agree that the demand for world-class gaming products is growing year-on-year. Mr. Grewal says this is certainly an offshoot of the rising popularity of gaming in India and we are seeing a market boom for all product types that are relevant to gaming, whether it's gear, peripherals, software, and hardware.

Affordability does play a role too because many complain that a big challenge faced in India is the high import duty on gaming products resulting in excessive prices, sometimes making games unaffordable for the average Indian consumer. But as Mr. Grewal says, prices for products affect only to some extent the people who are enthusiastic and passionate about gaming, “They are tech-savvy, and most of them know precisely about the features and models that they are looking for. If any particular model they desire, costs a few bucks more, that's not going to stop them from getting the product. They may postpone the time to buy, but surely will not withdraw their decision from buying.”

Most Taiwanese gaming brands say that their existing gaming products have found many takers. BenQ recently launched two new monitors, the 27-inch Quad-HD, AMD Freesync supported XL2730Z and the 24-inch XL2430T HD widescreen in the price range of Rs 36,000 to Rs 50,000. The demand was so high that the company ran out of stock. “We had to call for more stock because of such high demand,” says Mr. Singh.

ASUS launched the ROG GL552 priced at Rs 70,999 that has been hailed by enthusiasts as one of the few good gaming laptops in India that is on the lower side of the Rs 1 lakh and probably affordable to passionate gamers. Says Mr. Su, “We see a lot of demand from beginners who do not need a professional gaming machine but at the same time would need a configuration that would help them enjoy their gaming experience. Our whole objective was to allow these beginners and entry level gamers to join the ROG league that were originally held back to due price.”



for cyber cafes to sustain here because they may find it hard to recover money they invest in gaming products. The per hour cost

Gigabyte launched the Gigabyte 100 Series G1™ gaming motherboards, featuring the world's first audio onboard design that includes the Creative® Sound Core3D™ Quad-Core Audio Processor and Burr-Brown High End 127 dB DAC; and the Killer DoubleShot-X3™ Pro.

Gaming companies all over the world are busy keeping a close eye on India. ASUS sells gaming products under its brand called the Republic of Gamers, aka ROG, which in itself is considered a benchmark among the gaming community, has lined up some launches later this year targeted at entry-level gamers. Mr. Su elaborates, "We have the strongest gaming portfolio in all segments, from entry level gaming, hard-core to professional gaming. We want to continue expanding our portfolio. Our experience for the ROG series has been phenomenal to date and has constantly encouraged us to deliver on fulfilling the gaming requisites of all our existing and prospective customers."



BenQ will be launching two new gaming monitors soon. Says Mr. Singh, "The first is the XL2420G, our 144 Hz refresh rate gaming monitor with NVIDIA G sync support. This will retail at Rs 49000. The second model is the 27-inch RL series gaming monitor, the RL2755HM. This will retail at Rs 29,000."

#### Game to fame:

For a long time, gaming was not taken seriously in India. At best, it was considered an expensive hobby and frivolous. But things are changing since gaming is a burgeoning industry. Today, avid gamers and game developers in India don't raise as many eyebrows as would have been the case a decade ago. Mr. Grewal says, "You can see a lot of gaming teams coming up, who spend a lot of time practicing and polishing their skills, especially on the eve of a gaming contest.

This brings forth a big opportunity to component vendors like us as the growing gaming community is making a beeline for sophisticated gaming rigs." Mr. Grewal is alluding to competitions like the Taiwan Excellence Gaming Cup that are making the gaming arena in India vibrant and exciting.

#### Gaming on the right track:

Globally, gaming has now moved on from a leisure activity to a high-octane spectator sport with tech giants pumping in serious money. In India, however, some feel that competitive gaming still has a long way to go before it becomes an eSport. Says Mr. Grewal, "In countries like Korea, gaming is considered as a major sport and also a lucrative profession. In many countries, winners and successful players are treated as celebrities with a fan following that can make even film stars envious. India has to go a long way in gaming, but we have made a good start. Many of the cyber cafes have improved themselves into gaming cafes. These are frequented by gamers who are really passionate about eSports. Gone are the days when casual gamers used to flock around cyber cafes, and wait for their turn."

All said and done, the gaming industry in India is growing and experts say there is a big value chain that will support its growth. "Vendors and manufacturers of gaming products are investing hugely in marketing activities to create demand for their products. These include gaming experience zones, branding, and advertising among others. They are supporting and organising gaming events, and also giving technology and monetary assistance to gamers," states Mr. Grewal.

So, if you are a passionate gamer in India who loves to put your best combat technique forward, this is the time to be here. As Mr. Su points out, the industry is on the right track, "Growth projections look even better, with the gaming market in India pegged to reach Rs. 4,000 crore by the end of 2017."



TEGC moment - Top 8 finalists with Brand Sponsors and TAITRA Representatives

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Sennheiser Urbanite



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Micromax Canvas Express 2



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Bazaar

# Meizu M2 Note

Add to cart, DIRECTLY

The sub-10K smartphone segment in India is huge. You can buy phones in all sizes and with different features. While most of these phones offer an identical spec-sheet, there are few phones which rise above the competition. The YU Yureka Plus and the Lenovo K3 Note are fine examples of such phones. However, their flash sale models aren't the easiest to get through to, as one really has to keep their eyes and ears open to get lucky. This makes buying these phone a big frustrating problem for people who aren't very patient. Enter the Meizu M2 Note.

Like every phone in the sub-10K category (barring only the Yu Yuhoria), the Meizu M2 Note features an all plastic build. Fit and finish of buttons and seamless design along the edges give the phone a somewhat premium feel. The design of the Meizu M2 Note looks quite familiar as some design cues have been taken from the erstwhile iPhone 3GS. It's not the most original design, but long story short the phone looks good and well designed. Meizu has also taken a leaf out of Samsung's design book and given the phone a physical home button, which works as a back button as well.

The Meizu M2 Note offers a brilliant display which is pretty good to stare at. The 5.5-inch 1080p display is probably the best in the sub-10K price point right now. It offers the best viewing angles we have seen till now on a mobile display in this price range. Colours are almost accurate and the display is easily viewable in all lighting conditions. We just have one complaint about the display and that is, since it does not offer Gorilla Glass, the touch feel is not that slick. But then we shouldn't get ahead of ourselves, it's still a 10K phone after all.

Meizu's Flyme OS is interesting. It offers a nice balance between good looks and simplicity. The UI is very straightforward and works without an app drawer. The beautiful display makes the experi-



ence even better. It should also be mentioned that the phone comes with just two pre-installed Google apps — Maps and Play Store. Basically, in true Chinese fashion, instead of forcing the user to use a bunch of Google apps, Meizu has made it a choice. Good job Meizu.

Let me be very clear, the octa-core Mediatek processor in the Meizu M2 Note is capable, but it still falls considerably short when compared to the Qualcomm Snapdragon 615 powering the Yu Yureka Plus. That said, the phone can handle day to day tasks with ease and multitasking on the phone, with 2GB of RAM onboard, is also good.

I haven't seen any phone in the sub-10K category, which preserves battery like the Meizu M2 Note. Using the phone on a day to day basis

with all kinds of tasks, from writing this review to playing graphic intensive games, the phone never ran out of juice. I was easily able to use the phone for long before it required a charge. That's impressive.

The 13MP rear camera is quite good as well. It might not offer the best camera in the sub-10K category, but it is better than the YU Yureka Plus. Images show accurate details, and true to life colors. Low light image quality is equally good. The camera software offers features like slow motion video capture and manual modes, which adds to the pros of the camera. The front facing selfie cam completes the story, being one of the best selfie cameras in the segment.

If you're looking for a well balanced smartphone under the sub-10K price point, then this is the phone to go for. The Meizu M2 Note lives up to its spec-sheet and delivers in every way possible. Add to that, the fact that you don't have to tolerate a flash sale, and you have the best smartphone in the sub-10K price point. Period.



Features .....	90
Performance.....	79
Value .....	59
Design .....	83

## Specifications

**SOC:** Mediatek MT6753;  
**RAM:** 2GB; **Internal**  
**Storage:** 16GB; **Display:** 5.5-inch 1080p IGZO; **OS:** Android 5.0 Lollipop;  
**Battery:** 3100mAh

## Contact

**Meizu India**  
**Phone:** 1800 3070 9925  
**Email:** [csindia@meizu.com](mailto:csindia@meizu.com)  
**Website:** [www.meizu.com/in](http://www.meizu.com/in)

Hardik Singh



### Heart in a box

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# Karbonn Titanium Mach Five

Not quite at Mach speed

The Karbonn Titanium Mach Five is your run of the mill average looking phone. The back of the smartphone has a textured matte grey finish making it comfortable to hold. The front on the other hand is what you'd expect at this price.

For everyday use the phone worked just fine. The call quality was good at both ends but the earpiece does leak a lot of audio at full volume. The speaker is positioned at the back of the device and that isn't great especially if you are someone that placed the phone on a table while listening to music through the loudspeaker.

Coming to the cameras, the rear snapper's performance



Price  
₹5,999



Features .....	74
Performance.....	60
Design .....	66
Value .....	56

### Specifications

**Display:** 5-inch 720P display; **Processor:** MediaTek MT6582 1.3GHz quad-core; **RAM:** 2GB RAM; **Storage:** 16GB; **Camera:** 8MP rear and 5MP front; **Battery:** 2200mAh

### Contact

**Karbonn India**  
**Phone:** 1860 200 4660  
**Email:** [info@karbonnmobiles.com](mailto:info@karbonnmobiles.com)  
**Website:** <http://www.karbonnmobiles.com>

wasn't a disappointment. The images are good enough if you want to post them online. Its low light performance isn't the best but they aren't all trash.

For a price of ₹6,000 the smartphone has 2GB RAM, a good display and great battery life in its favour. Where it lacks is with the inconsistency of the touchscreen and the inability to run Google maps smoothly. If you are looking for a smartphone under ₹6000 you have the likes of the Moto E along with the Micromax Canvas Xpress 2 to consider. The Xpress 2 performed better in our benchmarks despite its limiting 1GB RAM. If built-in storage is important to you, then the Mach Five is the one for you. But if you are looking for a phone with better overall performance and some Bappi Lahiri level swag, then we suggest you take a look at the Canvas Xpress 2.

Sameer Mitha

# Sennheiser Urbanite

All about that sound



In first look, the Urbanite's neat black nylon with white interiors impart a premium feel to it, and build quality is impressive. It is big, and weighs 260 grams. You can fold the earcups and detach the cable to stow away, when you need to.

The Urbanite's supra-aural ear coupling is excellent, resulting in high cancellation of surrounding noise. The ear cushions are soft but heavy, and gets uncomfortable with prolonged usage. Built for iOS devices, the low impedance of 18Ω facilitates the low-power mobile audio drivers, deliv-



ering higher fidelity audio output and high volume levels. Total harmonic distortion (THD) levels are below 0.5%, and we heard no audio distortion at any point. The Sennheiser Urbanite uses closed dynamic transducers for audio output. The sound is well balanced, providing ample bass but not overloading it. The mids sound enhanced and clear, and the highs will not pinch the ears but leave an impact. At 118dB SPL/mW, the audio is powerful, clear and high, but pounds on the ears at high volume levels.

The Urbanite comes with a detachable 1.2m tangle-free cable. The frequency response of the headphones range from 16-22000Hz. The omnidirectional microphone is a good receptor, with frequency response range of 100-10000Hz. It also has music and call controls. At ₹15,990, the Sennheiser Urbanite is a prolific pair of headphones, and would have been even better had it been more comfortable during long use.

Souvik Das



Features .....	86
Design .....	88
Performance.....	81
Value .....	65

### Specifications

**Frequency response:** 16 Hz to 22 kHz, **Impedance:** 18Ω, **Total Harmonic Distortion (THD):** < 0.5% @ 1kHz, 100dB, **Sound Pressure Level (SPL):** 118dB @ 1kHz, 1Vrms, **Ear coupling:** Supra-aural, **Transducer:** Dynamic, closed, **Microphone:** Omni-directional, 100 Hz to 10 kHz, **Weight:** 260 grams, **Cable:** 1.2m, 3.5mm angled connector

### Contact

**Sennheiser India**  
**Phone:** 0124-4187-800  
**Email:** [en-in.sennheiser.com/service-support-contact](mailto:en-in.sennheiser.com/service-support-contact)  
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Bazaar

# ASUS Zenbook UX305

Almost a premium ultraportable

The ASUS Zenbook UX305 gets a lot of things right. It's a slim, trim 13-inch ultraportable that can be easily mistaken for more than what it's worth, and we mean that in the best possible way. Right from its unboxing, the first thing that catches your attention is the screen lid, which has a finely textured pattern of concentric circles – "spun metal hairline details" characteristic of all Zenbooks – that looks pretty cool to touch and on the eye. Hold the notebook up and it's quite light at 1.2 kg, comfortably sitting inside any backpack without a hitch. You can barely feel its weight! And at 1.2 cm thin, it's easily one of the thinnest laptops around. All the anorexic dimensions does affect the notebook's build quality – its screen feels a bit flimsy in comparison to the 13-inch MacBook Air, for instance, and it lacks that reassurance factor that an expensive, well-built ultrabook comes with. Not a dealbreaker, though, all this means is that you just have to be extra careful about this notebook's screen – make sure it doesn't flex or bend too much, when it's placed in your backpack make sure no unnecessary stress is falling on its spine.

In terms of its keyboard and trackpad, the Zenbook UX305 is reminiscent of the MacBook Air to a certain extent. The typing experience is certainly quite good, no complaints whatsoever, if anything its single-slab trackpad is something that most prospective users will need to get used to, as the unit we received had slightly clunky trackpad – nothing to spoil the party, but enough to make you wonder if you pressed or clicked its right / left area with enough force or not.

Apart from coming with 5th generation Intel Core M processor, it has 256GB SSD storage built in. At one hand the processor is designed to save power and not be a speed demon, while on the other hand the native SSD lends an element of lightning-paced agility on Windows 8. As an overall performer, this notebook does very well in terms of built-in battery life (4 hours and 40 minutes on high performance preset) and audio performance (thanks to B&O Tech audio), but it strictly does OK (which means nothing great) in terms of its core CPU performance. From a performance perspective,

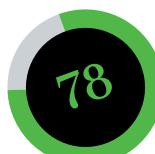


the Zenbook UX305 is for anyone who desires a sleek, good-looking ultrabook with very good battery life and fast-storage related transfer speeds. It also does a good job of playing multimedia content, thanks to its Full HD IPS screen. However, if we had to rate its screen against the MacBook Air or HP Spectre x360, the Zenbook UX305's screen would come in at third place, which is not bad at all. But – important thing to remember – it also costs considerably lesser than the aforementioned Apple and HP slim notebooks.

Another great performance aspect of the ASUS Zenbook UX305 is that it runs cool during most of its operational use. We routinely saw temperatures hovering between the 40°C to 50°C, from peak to mild load, which is better than most laptops we can speak about.

To summarize, there's a lot to like about the ASUS Zenbook UX305. It's sleek, ultraportable, and has fast-paced performance elements. Look at its feature list in the spec sheet alongside and you'll notice that it has pretty much all bases covered, if not more.

The only thing it misses out on are a strong CPU, ethernet slot, discrete GPU and better build quality. But at 50k, we can't ask for the moon! We have to be realistic. If you're tired of your laptop, this is a nice ultraportable upgrade priced aggressively.



Features .....	80
Performance.....	78
Design .....	78
Value .....	77

## Specifications

**Screen:** 13.3-inch, 1920x1080 pixels; **CPU:** Dual-core Intel Core M-5Y10c, 0.8 GHz (998MHz); **RAM:** 4GB DDR3; **Storage:** 256GB SSD; **Graphics:** Intel HD 5300; **Wireless:** Wi-Fi 802.11n + Bluetooth; **Connectivity:** USB 3.0 x 3, mini HDMI, SD Card slot; **Webcam:** HD 720p; **Weight:** 1.2 kg

## Contact

**ASUS India Pvt Ltd**  
**Phone:** 1800-2090365  
**Email:** <https://goo.gl/OP4fsv>  
**Website:** [asus.com/in](http://asus.com/in)

This is one of the slimmest laptops we have reviewed

Jayesh Shinde



### Smart Umbrella

Stay dry, and also in the light.

Right here:

<http://dgit.in/smrtumbrella>

### Bored of Google!!

If you are bored of Googling

everything here 5 alternates for you.

<http://dgit.in/AltGoogle>

# Lenovo K3 Note

Short by a mile

The Lenovo K3 Note is a neat device, which sports a real subtle design look and feel. No backlight for the front keys can be a major issue at times on this device, but otherwise, it is well-built and designed – made of matte plastic with a slight, added shimmer. Its side keys are solid, and the display is amply bright. The phone's viewing angles are good, and the nice colour optimisation makes it look even better at times.

Regular tasks like calling, messaging, music and internet browsing are fluent on the K3 Note, without any glitch. It manages to handle multiple tasks smoothly, making it apt for continuous social media activities and simultaneous usage of camera/messaging/maps. While the Lenovo K3 Note is not the best camera



Price  
₹9,999

smartphone in this budget, it suffices at its main task of social media photography. The Meizu M2 Note features a better camera, but the K3 Note is just about sufficient in terms of selfies and group photographs. It lacks clarity in low lighting conditions.

Gaming performance was surprisingly throttled, and we couldn't keep Asphalt running smoothly for over 10 minutes – which was a bit strange. The K3 Note is not meant for gaming, apart from lighter games like White Tile. The phone's speaker is loud and sounds reasonably clear. Call quality in terms of earpiece clarity and network retention was fine, everything worked well without any glitch whatsoever.

The Lenovo K3 Note, at ₹9,999, is a good device for all daily needs, along with a decent one-day battery stamina.

Souvik Das

# Micromax Canvas Express 2

Achilles of the budget segment



The sub-7K smartphone segment is a very highly contested price bracket, with phones like Xiaomi's Redmi 2 and the YU Yuphoria offering excellent bang-for-your-buck. Micromax, however, is no stranger to the scene here and it knows the budget segment market very well, and the new Micromax Canvas Xpress 2 is out to trump them all.

The Micromax Canvas Xpress 2 is a good looking phone. The matte plastic back, combined with the 5-inch display, feels nice and is easy to hold. The 720p HD display also offers very good and very wide viewing angles, making it one of the best displays I have seen on a budget smartphone. The phone is a brilliant performer for the price, and was more than impressive all-



Price  
₹5,999

round. It goes without saying that day-to-day tasks were a breeze, browser performance was good, and multi-tasking is decent.

The only flaw in the phone is its battery life. Using the phone as a daily driver (including gaming), it was able to last just over 6 hours at an average, while shuffling between Wi-Fi and 3G networks – forget about going all day long without recharging at least once. This budget offering has a 13MP camera sensor at the back, which is not the best 13MP camera sensor around, but does a good job for the price. The images taken by the rear camera have decent dynamic range and very good colour reproduction.

The Micromax Canvas Xpress 2 is a great phone for the price if you don't mind the average battery life.

Hardik Singh

75

67

Features .....	86
Design .....	72
Performance .....	84
Value .....	58

Features .....	67
Performance .....	71
Value .....	59
Design .....	78

### Specifications

**Display:** 5.5-inch 1080p; **Chipset:** MediaTek MT6752; **Memory:** 2GB; **Storage:** 16GB; **Camera:** 13MP rear, 5MP front; **Battery:** 3000mAh

### Contact

**Lenovo Smartphones**  
**Phone:** 1800-3000-9991  
**Email:** [smartphonets@lenovo.com](mailto:smartphonets@lenovo.com)  
**Website:** <http://shopap.lenovo.com/in/en/smartphones/>

### Specifications

**Processor:** Mediatek MT6592M; **RAM:** 1GB; **Internal Storage:** 8GB; **Display:** 5-inch 720p; **OS:** Android 4.4.2 Kitkat; **Battery:** 2500mAh

### Contact

**Micromax**  
**Phone:** 18605008286  
**Email:** [info@micromaxinfo.com](mailto:info@micromaxinfo.com)  
**Website:** [www.micromaxinfo.com](http://www.micromaxinfo.com)



## Like Whatsapp, Like Instagram

Instagram turns itself into a full-fledged messaging service, like WhatsApp.

<http://dgit.in/InstaMsg>



## 6 new WhatsApp features

With the latest update of WhatsApp a whole array of new features were introduced.

<http://dgit.in/WhatFeat>

Bazaar

# Moto G (3rd Gen)

Weighed, measured and found wanting

With the Moto G (3rd Gen), Motorola talked a lot about delivering highly on the device's user experience to intended customers. Unfortunately though, the user experience is determined by the overall performance of a smartphone, and the Moto G (3rd Gen) fails in that respect, when compared to competitors.

The Moto G (3rd Gen) can deal with your regular tasks, but it is not as powerful as its competitors – oh no sir! The simple fact can't be ignored that phones like the ASUS Zenfone 2, Xiaomi Mi 4i and even the lower priced Yu Yureka Plus are much more powerful than the new Moto G, not just in terms of specifications, but the overall performance as well. It's not that the Moto G has no positives going for it, but as an overall value for money smartphone, it has lost out majorly this time around compared to its past iterations.

On top of that, Motorola also boasts a 13MP rear camera, with the same sensor as the Nexus 6. Unfortunately though, both the Xiaomi Mi 4i and Asus Zenfone 2 have better cameras than this one, with the same megapixel count. While the Moto G's camera is better than its predecessor's, it's still not very good. It can take respectable shots under sunlight, but that's about the only situation where it is really good. In addition, the Moto G (3rd Gen) sticks with the stock camera app, which means you get almost no control over the camera – no traces of evolution here.

The strength of the Moto G is in its battery and water resistance. We put the phone under water for 30 minutes and it came out with flying colours. The IPX7 rating makes much more sense on a sub-15k smartphone and adds value to the Moto G. That said, it is worth noting that the Moto G is only water resistant as long as the back cover is properly placed. When you put the back cover, be sure to check the area next to the camera. The back cover has protectors built into it, which ensures



Price  
₹12,999  
(for 16GB/2GB)

that the SIM slot is protected from water.

Further, on the battery front, the third generation Moto G follows its predecessors, providing good backup. The phone can easily last a day and a half on normal usage, including lots of social networking, a bunch of text messages and a few calls. Gaming on the phone brings down the battery fast, but it also doesn't heat up very easily. It does get the battery to drain much faster though. That said, it is also worth mentioning that we've seen many phones lose battery much faster during gaming.

The phone is built quite sturdily and Motorola has kept its simplistic yet functional design language. The Motorola

Moto G (3rd Gen) may not be a stunning phone to look at, but its design works. The curve on the back as usual helps you get a better grip on the phone, and this time it's aided by the back cover as well, which is quite grippy. Simply in terms of looks, the newest Moto G is nothing compared to the likes of the Xiaomi Mi 4i, but it's functional. The only problem is that barring the Asus Zenfone 2, most other phones in this price range have pretty good and comfortable designs.

So, coming back to the idea of delivering user experience, the third generation Moto G fails when compared to competitors. Motorola has tried to play the specs game in the camera department, and lost, while in other areas, it's just not good enough when compared to an Asus Zenfone 2. If you want to buy the best performer in this price range, then the Asus Zenfone 2 is what you should go for. If, on the other hand, you want a phone that has a good camera, but compromises a little in terms of processor performance, then the Xiaomi Mi 4i is the pick of the lot. The new Moto G provides only the brand value that comes with the Motorola name, and that is the only reason that anyone can have for buying it.



Design .....	77
Features .....	64
Performance.....	46
Value .....	49

## Specifications

**Display:** 5 inch 720p HD; **Battery:** 2470 mAh; **Processor:** 1.2 GHz Qualcomm Snapdragon 410 quad-core 64-bit; **RAM:** 2GB/16GB, 8GB/1GB; **Expandable Memory:** Yes, 32GB; **Operating System:** Andriod 5.1.1

## Contact

**Motorola India**  
**Phone:** 1-800-102-2344  
**Email:** Live Chat and Email through Motorola India website  
**Website:** <http://www.motorola.in/>

Prasid Banerjee



## Terrorist software user?

Using encryption software can brand you a terrorist in some countries.  
<http://dgit.in/SoftCrypt>



## Word for Mac 2016

With the launch of Word 2016 for Mac, here are some of the new features.  
<http://dgit.in/MacWord>

# Fujifilm Instax Mini 90 Neo Classic

Peek from the past



Price  
₹11,499



78

Features .....	75
Design .....	85
Performance.....	70
Value .....	80

### Specifications

**Film size:** 86mm x 54mm; **Picture size:** 62mm x 46mm; **Kit lens:** 2-element electronic 60mm f/12.7; **Viewfinder:** 0.37x image viewer eyepiece with target spot; **Shutter speed:** 1.8" to 1/400" (macro), max. 10" (bulb); **Weight:** 296 grams

### Contact

**Fujifilm India**  
**Phone:** 011-4550-9780  
**Email:** [http://www.fujifilm.in/Support/digitalcamera\\_servicecenter/](http://www.fujifilm.in/Support/digitalcamera_servicecenter/)  
**Website:** [http://www.fujifilm.in/en/products/business\\_products/photofinishing/instax\\_series/](http://www.fujifilm.in/en/products/business_products/photofinishing/instax_series/)

We were really excited to get my hands on the Fujifilm Instax Mini 90 Neo Classic. The Fujifilm Instax series is a line of instant photograph cameras that are quite exciting, especially in a world where photography has turned entirely digital. It has been a long time since films and reliance on analogue devices have been erased, and replaced by electronically operated digital cameras in every price bracket. Of course, detailing and accuracy have increased since the days of the Vivitar V3800N and Zenit 122K. But there is something pleasantly charming in taking a break from the completely digital world, to delve into what the Fujifilm Instax Mini 90 Neo Classic has to offer.

Fujifilm has dubbed the Instax Mini 90 Neo Classic as its flagship camera of the Instax series. As is usual with a flagship device, the Instax Mini 90 looks the most mature in the Instax family. The majority of the dual-tone plastic body gets a faux leather texture, and is available in two colours: tan and black. One very likeable factor about it is the simple, uncluttered outer shell of the camera, which succeeds in retaining a retro look to it.

The Fujifilm Instax Mini 90 is a compact camera, which doesn't feel too bulky to hold and carry around. The top edge of the camera gets a smooth curve, which adds to its seamless, flowing design. The rectangular shape along with rounded edges contribute further in providing the Mini 90 with a minimalistic, simplified design. Build-wise, too, it feels reasonably sturdy. The film and battery

flaps on the back, though, feel a little flimsy. The leather texture is distinctly plastic, and the top half of the dual-tone plastic body of the camera has a smoothened finish about it.

Ergonomically, it is slightly difficult to use the Mini 90, if you have comparatively smaller palms. However, it is not difficult, and body grip on the camera is good. Adjusting the digital settings on it is really simple, and it does not take long to get a hang of it. Fujifilm has designed the Instax Mini 90 keeping in mind a simple, hassle-free and fun photographic experience, and that is exactly what you get with it.

The Instax Mini 90 is equipped with a 2-element mechanically operated lens with a focal length of 60mm and aperture of 12.7. In the Instax Mini 90, the shutter speed ranges between 1/8" and 1/400" for normal shooting, while the aperture is fixed at f/22 by the camera.

The prints from the Fujifilm Instax Mini 90 Neo Classic camera are crisp, with good colour accuracy. Fujifilm has given an additional layer of protection on the film to protect it from moisture and gradual degradation. Fujifilm could have enhanced the retro feel of the camera by adding sepia/monochrome tints to the prints. That amiss, this is a well-equipped polaroid camera that takes good photographs.

The Instax films have a rich colour tone in the prints, which make photographs look crisp. There is an insulation to provide durability to the prints. Colour tone is decently balanced, although certain daylight photographs had a slightly cool hue to it. Check out the images here to see how the photographs look!

The Fujifilm Instax Mini 90 Neo Classic can produce decent photographs, despite weak image stabilisation and a lack of manual controls. Having said that, it makes for a nice change from the usual digital cameras. Adding to that the retro look and simplicity of operation makes for a very novel birthday present, or even one for the festive season! At ₹11,000 for the camera and roughly ₹500 for a set of 10 prints, we give the Instax Mini 90 Neo Classic a massive thumbs up!

Souvik Das



## Windows 10 : Privacy?

Enhance your Windows 10 privacy by disabling data collection with DisableWinTracking.  
<http://dgit.in/WinTrack>



## Andriod Wear on Handlebars!

Is it still an Android Wear if you put it on the handlebars of your bike?  
<http://dgit.in/SonyCany>

Bazaar



Features .....	66
Performance.....	46
Design .....	78
Value .....	51

### Specifications

**Display:** 8-inch 1280 x 800 display; **Processor:** MediaTek 1.3 GHz Quad Core Processor; **RAM:** 1 GB RAM; **Storage:** 16 GB; **Camera:** 5 MP rear and 2 MP front; **Battery:** 4000 mAh

### Contact

**Micromax**  
**Phone:** 18605008286  
**Email:** [info@micromaxinfo.com](mailto:info@micromaxinfo.com)  
**Website:** <http://www.micromaxinfo.com>

# Micromax Canvas Tab P680

Just missed the mark

For the price you pay, the P680 is a good-looking device. Surrounding the display is a black border, which makes the display look smaller than it is – a standard we have seen with budget tablets. Turn the table around and you will be slightly impressed. The back of the tablet is plastic with gunmetal like finish. Sticking with the back, the top and bottom have a rubberized finish, which adds to the grip, a nice touch. It also makes the tablet look quite premium.

The tablet lasts for five hours of movie playback, which is impressive. For everyday use such as watching videos, typing, reading books and browsing websites, the device runs fine. Strain it with multi-tasking and you will notice considerable lag.



The tablet also boasts of the ability to make calls and we found the voice quality from the device to be quite good overall.

For ₹13,000 you can get a behemoth of a performer with the Xiaomi Mi Pad. The Mi Pad runs on the NVIDIA Tegra K1, 2 GB RAM and 16 GB Built-in storage. The 7.9-inch display has a 2048x1536 pixel resolution. The device however can't house a SIM card and thus can't make calls. So by increasing your budget by ₹3,000 you can get a much better performing device.

However, if you are looking to make calls with a tablet and don't mind compromising on the performance, then you can consider the Canvas Tab P680.

*Sameer Mitha*

# Merlin Aquatrax

Powerful but the build is a little iffy

The Aquatrax is one hardy speaker that comes with an IP54 protection rating. This particular rating makes it resistant to all manner of dust and water splashes from all directions. I tested it by taking it with me into the shower and went a little nuts with my early morning head-banging routine in order to deliberately get water onto the speaker. Fully drenched, the Aquatrax continued to pump out Major Lazer & DJ Snake's - Lean On without a hitch. No I'm being silly. Of course I don't headbang to Major Lazer in my shower.

Apart from the all-weather appeal, does the speaker have anything else to offer? It's got NFC for easy pairing for one thing, but on the performance front there is ambiguity. The two 5 W drivers make for a loud listening experience. The bass is powerful thanks to what I'm guessing are

good quality passive drivers somewhere inside its rubberised body. The clarity isn't that great though. Take the volume up into the red and you'll quickly encounter distortion. The build quality overall is pretty neat except for one troubling issue – the

rubber flap that covers the aux and charging port doesn't seal perfectly. This one thing could that once critical flaw that compromises the water resistant quality of the speaker. I didn't try to deliberately

angle my water splashes to try and get some in and purposely sabotage the speaker but the gap is evident and a little troubling.

At a street price of around ₹4,000 it's a worthy purchase if you are looking for a water resistant speaker that is powerful. If you are going to torture test it though, we have our doubts.

*Siddharth Parwatay*



Features .....	70
Performance.....	60
Build .....	60
Value .....	60

### Specifications

**Rated power:** 2x 5 W RMS; **Dustproof & Waterproof rating:** IP54; **Bluetooth:** Bluetooth 4.0; **Additional:** NFC; **Battery:** 1,400 mAh Lithium-ion; **Input:** Aux-in; **Dimensions:** 140x75x65mm

### Contact

**Merlin Digital**  
**Email:** [info@mymerlin.in](mailto:info@mymerlin.in)  
**Phone:** (022) 6139-4602  
**Website:** [www.mymerlin.in](http://www.mymerlin.in)



Bazaar



## Walking again with Tech.

Robotic Exoskeleton enables paralysed people to walk again voluntarily.

<http://digit.in/ExoRobo>



## Camera, gets Intelligent

Everything recorded by surveillance isn't useful, so here's the intelligent solution.

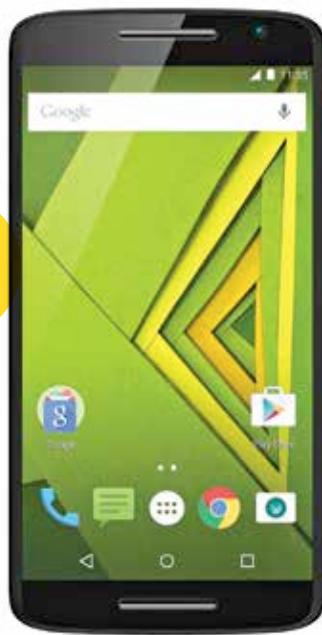
<http://digit.in/IntCam>

# Moto X Play

Welcome back Moto

With the Moto X Play, Motorola has the one thing it never did – a good camera. The 21 megapixel shooter takes good images in both low light and good lighting conditions. In fact, the phone can surpass the camera on the OnePlus One in many situations, which is saying something. It produces good details and is true to its source and is very close to the Xiaomi Mi 4. Unless of course, you prefer warmer images, the Moto X Play is as good or better.

Another good thing is its build quality. While there's no fancy metal body here, the curved plastic back just works. The Moto X Play doesn't just look good, it looks different from the sea



Price  
₹18,499



Features .....	75
Design .....	86
Performance .....	71
Value .....	58

### Specifications

**SOC:** Qualcomm Snapdragon 615 octa-core; **RAM:** 2 GB; **OS:** Android 5.1.1; **Display:** 5.5-inch FHD IPS; **Battery:** 3630 mAh; **Camera:** 21 MP rear, 5 MP front

### Contact

Motorola India

Phone: 1-800-102-2344

Email: Live Chat and Email through Motorola India website

Website: <http://www.motorola.in/>

of smartphones out there. It has the same old twin-speaker setup on the front. The back has a rubbery finish, which adds to the grip and despite the 5.5-inch display and 10.9 mm thickness, the phone is almost as comfortable as a 5 inch device. It's just a little bigger than the Xiaomi Mi4 in overall dimensions.

The only real weakness of the phone though is the processor performance. The Snapdragon 615, like in many other phones, is quite laggy. If you like to play games that require quick/precision taps then you'll not like this phone. Kind of ironic for something that has 'play' in the name. The battery more than makes up for it though. The Moto X Play lasts a full day on regular usage without breaking a sweat, and can go further if you're more careful and use the battery saver mode often.

Prasid Banerjee

# Casio EcoLite XJ-V1

Hit and a miss picture



Price  
₹54,995

It's surprising to note how lightweight the EcoLite XJ-V1 projector is when you hold it – one of the lightest projectors we've tested in the past year or so, a few hundred grams heavier than the LG PF80G LED projector we checked out earlier – the lightest thus far. The projector has an all-white enamel shell that elevates the otherwise drab box-like aesthetic appeal of the XJ-V1. It's



Features .....	60
Performance .....	60
Design .....	70
Value .....	55

### Specifications

**Display:** DLP chip; **Source:** Hybrid; **Source Life:** Up to 20,000 hrs; **Brightness:** 2700 lumens; **Native resolution:** 1024x768; **Aspect ratio:** 4:3; **Wireless Remote:** Yes; **Inputs:** HDMI, VGA, 3.5 mm jack, RS-232 serial port; **Weight:** 2.81 kg

### Contact

Casio India Co. Pvt. Ltd

Phone: 011-66999200

Email: NA

Website: [www.casio-intl.com/in](http://www.casio-intl.com/in)

not a head turner by any means, but it looks dressed for both a formal or casual environment.

We were disappointed with the lack of connectivity port options on the projector – only one HDMI and no USB port is difficult to justify these days. Also the native aspect ratio of the XJ-V1 isn't Full HD, which is another negative against its features column. In terms of screen projection, we witnessed quite a bit of moire while we ran our DisplayMate tests, which is noticeable whenever the device has to project an excessively white image – this isn't the hallmark of a very good projector.

But it isn't all bad as far as this Casio projector is concerned. It has a lightning quick power-on speed of seven seconds flat, comes with a hybrid laser and LED light source with a whopping 20K hour estimated life, and it runs extremely cool (37°C) as far as projectors are concerned. The projector's also very bright when we tested it with our light meter. Overall, we felt this projector shows promise but still has plenty of room for improvements.

Jayesh Shinde



## Hack body, learn skills

Body-hack electrodes could nudge your muscles into learning a new skill.

<http://dgit.in/BodyHack>



## Kill the Starfish

A starfish-killing robot is close to ready for trials on the Great Barrier Reef.

<http://dgit.in/KOStar>

Bazaar

# Yu Yunique

## Quite Yunique



Features .....	72
Performance.....	64
Value .....	70
Design .....	77

### Specifications

**Processor:** Qualcomm Snapdragon 410; **RAM:** 1 GB; **Internal Storage:** 8 GB; **Display:** 4.7-inch 720p; **OS:** Android 5.1 Lollipop; **Battery:** 2000 mAh

### Contact

**YU**  
**Phone:** 1860-212-2122  
**Email:** support@  
yuplaygod.com  
**Website:** [www.yuplaygod.com](http://www.yuplaygod.com)

**A**t ₹5,000 we weren't expecting much but the Yu Yunique has managed to beat the odds. Starting off with the matte finish plastic on the back and Gorilla Glass 3 on the front, puts it comfortably above other phones in the budget price category.

The display, sports a 720p resolution which is higher than any other phone in the category. It is also one of the best displays in the category.

The UI on the phone was a surprise. Unlike previous Yu phones that ran on Cyanogenmod out-of-the-box, the Yunique has an all stock Android interface which has its own unique appeal.

The phone is powered by a Qualcomm Snapdragon 410 SoC. It is able to deal with daily tasks like calling, browsing, chatting etc. without any hic-



cups, but I did feel the phone lag occasionally when the 1 GB RAM was pushed to its limit with not that many applications running in the background. Over what we'd call a regular day's usage,

the phone was able to manage around 6-7 hours without any gaming, which meant that by evening it would often run out of juice. Coming to the camera, the 8MP rear sensor from Omnivision does a pretty good job in good daylight conditions.

The Yu Yunique offers best in class performance, 720p display and a very good camera for the price. The phone falls short only in the battery department, but is still a very good device. So, if you have a budget of ₹5K or even ₹6K, the Yu Yunique is a very good buy.

Hardik Singh

# Nikon D5500

## Nikon's smallest is one of the best

**T**he D5500 is Nikon's answer to Canon's EOS 750D. Featuring a number of improvements of the previous D5300, the Nikon D5500 is the lightest and smallest DSLR till date, packed with a range of buttons controlling multiple aspects of photographs.

The only thing that the Nikon D5500 possibly lacks is an antialiasing filter. It houses an APS-C size, 23.5 x 15.6 mm DX-format sensor with 24.2 million effective pixels which is the same in numbers but is actually an updated version that can natively take the ISO level up to 25,600. Additionally, it has 12.6 EV stops and 39 focus points to enhance phase-detection autofocus, leading to excellent low light photography.

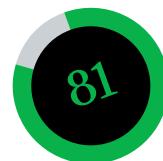
Despite the smaller body, the Nikon



D5500 packs in a deeper body grip. The mode dial is simpler, and the viewfinder gets touch functionality. There is also a proximity sensor added on top of the LCD, to sense when the eyepiece is being used, saving more

than 25 per cent of battery power. It also has Wi-Fi connectivity and uses the Expeed 4 image engine for processing data. The touch input is smooth, and auto-focus is fast and accurate, with the nine different cross point focus types.

Pairing large telephoto lenses do not create any issue, with the low-weighted centre of gravity of the camera body. With a vast range of features, the Nikon D5500 is currently the ultimate mid-range DSLR in the market!



Features .....	90
Design .....	84
Performance.....	88
Value .....	60

### Specifications

**Resolution:** 24.2 million pixels; **Sensor size and type:** APS-C DX CMOS; **Kit lens:** Nikkor AF-S DX 18-140mm f/3.5-5.6G ED VR; **Viewfinder:** 3.2-inch Touchscreen TFT LCD, pentaprism eyepiece; **Shutter speed:** 1/4000" to 30"; **ISO:** 100-25,600; **Weight:** 420 g; **Connectivity:** Wi-Fi

### Contact

**Nikon India**  
**Phone:** 1800-102-7346  
**Email:** Contact form  
**Website:** [www.nikon.co.in](http://www.nikon.co.in)

Souvik Das



Bazaar



## Business "better than ever"

A company is still making audio cassettes and sales are better than ever  
<http://digit.in/AudioCassette>



## Heights of Technology!!

Emergency crews smash car window to rescue baby only to find a lifelike doll.  
<http://digit.in/TechHt>

# InFocus M810

Whole lotta bling

The amount of shiny gold on the back of InFocus M810 is jarring. Maybe it will find a few people who like their phone with a dollop of bling, but we feel that there will be more detractors. Nevertheless, looking beyond the shiny gold back, it does make for a decent smartphone.

The InFocus M810 runs on Snapdragon 801, along with 2 GB of RAM and 16 GB of internal memory. The 5.5-inch, 1080p display sees a distinct improvement in colour accuracy and sharpness over its predecessor, the InFocus M530. Performance is smooth, there are no glitches during gaming, calling, video/audio streaming and other usual tasks. In short, there's enough firepower within the bling to let you run all your favourite applications.



Features .....	75
Design .....	70
Performance.....	69
Value .....	55

### Specifications

**Display:** 5.5-inch 1080p; **Chipset:** Qualcomm Snapdragon 801; **Memory:** 2 GB; **Storage:** 16 GB; **Camera:** 13 MP rear, 5 MP front; **Battery:** 2600 mAh

### Contact

**InFocus India**  
**Phone:** 0124-4066-055  
**Email:** NA  
**Website:** [www.infocusphone.com/in](http://www.infocusphone.com/in)



Price  
₹12,999

# Canon PowerShot G3X

Pint-sized powerhouse

The Canon PowerShot G3X is possibly the best choice in the market for photography enthusiasts who want a higher-grade image sensor packed into a smaller, portable body. At ₹59,999, the PowerShot G3X is an advanced point-and-shoot with a vast zoom range, touch-assisted focusing and a number of manual settings to get a photo as per your liking.

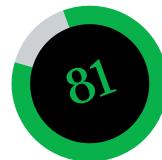
The PowerShot G3X has a 24-600 mm f/2.8-5.6 IS USM lens and a 20.2-megapixel 1-inch sensor, useful for wildlife and sports photography enthusiasts who want



Price  
₹59,999

a magnesium alloy camera body more compact than a professional DSLR. It packs in a number of physical function buttons and dials, which allows controlling of most fundamental features even without the touchscreen menu. Manual focusing, a little slow on G3X, is done with a single button than switches between manual and automatic focusing. Shooting auto with the G3X is highly convenient owing to its easily accessible feature set.

The shutter-control ring is placed between the video button, mode and exposure dials. Shooting modes include complete manual, aperture-priority, shutter-priority, creative auto, complete auto, burst, sports, scenes, filter and movie. ISO, macro, flash and autofocus modes have physical controls which are placed on the second ring by the viewfinder, which also controls exposure. The G3X also has one-switch Wi-Fi and NFC connectivity, making it currently the ultimate, compact, advanced shooting package that you can buy.



Features .....	90
Design .....	84
Performance.....	88
Value .....	60

### Specifications

**Resolution:** 20.2 million effective pixels; **Sensor size and type:** 1-inch CMOS RGBG; **Kit lens:** 24-600 mm f/2.8-5.6 IS USM; **Viewfinder:** 3.2-inch Touchscreen LCD, no eyepiece; **Shutter speed:** 1/2000" to 30", ISO: 125-12800; **Weight:** 740 grams; **Connectivity:** Wi-Fi, NFC

### Contact

**Canon India**  
**Phone:** 1800-180-3366  
**Email:** [www.canon.co.in](http://www.canon.co.in)  
**Website:** [canon.co.in](http://www.canon.co.in)

Souvik Das

# worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

## (MUST READS)



### THE FUTURE OF CRYONICS?

The future rides on the shoulders of Neuroscience. This well written (and quite emotional) read about how a 23 year old woman who was suffering from cancer preserved her brain in the hope that it may be revived in future is worth your attention.

<http://dgit.in/CryonicS>

### THE PROBLEM WITH BIG VIDEO GAMES

It seems like it was only a while ago that video games were small and could be easily completed. But now, game worlds have gotten bigger reaching a point where completing a game 100% means investing a huge chunk of your life into it.

<http://dgit.in/GameProbs>

### TECHNOLOGY AGAINST THE RAT MENACE

If you've been keeping up with Digit Diary every month, you'll know about the rat menace at our office. Rat infestation is a problem everywhere and now technology has come to the rescue. A Kickstarter for rat killing drones, anyone?

<http://dgit.in/RatKill>

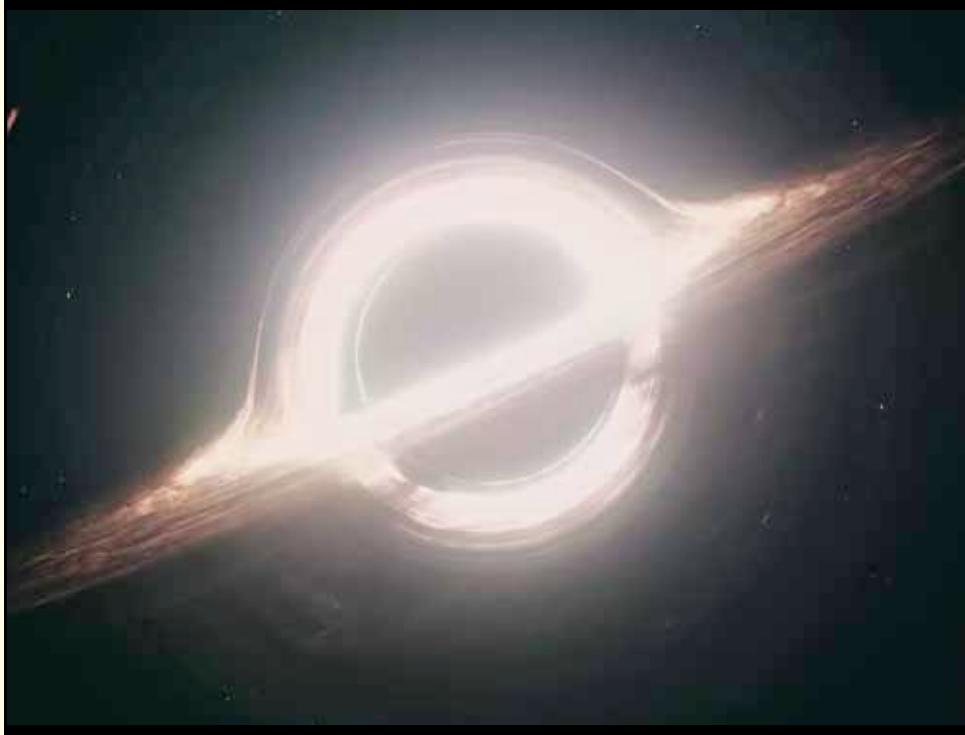
### COMPLETE TREE OF LIFE

Scientists recently published a draft of the complete tree of life that tries to connect the dots to life by naming, categorising and relating around 2.3 million species of plants, animals, fungi and microbes. Read more here:

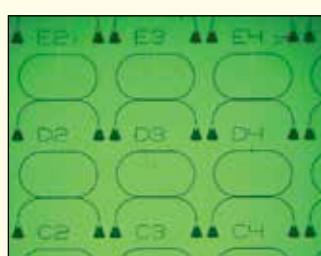
[http://dgit.in/Tree\\_Life](http://dgit.in/Tree_Life)

[io9 Corner]

### BLACK HOLE VISIBILITY EXPLAINED



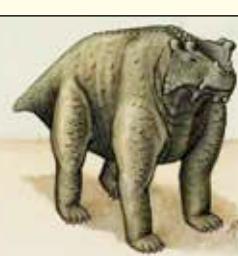
We're sure you know what a black hole is but if you've ever wondered about how we can see them if they don't even let light escape them? This article about that paradox will explain everything: <http://dgit.in/BHDox>



#### Memory chips of the future

Light is the answer to what the world of computing has been looking for. A team of researchers has created a light-based memory chip capable of storing data permanently. A first of its kind breakthrough that we've needed since long.

<http://dgit.in/LightMem>



#### First steps

An ancient pre-reptile - Bunostegos Akokanensis, from the Permian era over 260 million years ago has been identified as the earliest known creature which was capable of walking upright on all four of its legs. Read more here:

<http://dgit.in/EarlyUprightSteps>



#### How much food?

Hunger is a real problem the world over and although numbers suggest that global food insecurity has been falling, we still need drastic steps to overcome it once and for all. How drastic? Around 11.8 million tons of grain.

<http://dgit.in/HungryWorld>

**BINAURAL AUDIO**

Binaural audio is considered to provide a really natural sounding three dimensional sound. It's recorded by placing two stereo microphones in ear-like cavities inside a dummy head, thus, helping capture and recreate the sound almost exactly how you'll be hearing it.

<http://digit.in/3DBinAudio>

**DRONE RAGE**

What were initially considered to be remotely controlled flying objects for military operations have now become something that everyone either wants or hates. Drones have crept into diverse fields, be it for hobby, defence or even for commercial purposes so you should read more about these sky demons.

<http://digit.in/Droneland>

**RISE OF RANSOMWARE**

Ransomware is a type of malware that locks certain important parts of your PC like the keyboard for example and holds your personal data for ransom by not letting you access it. There has been a sudden rise in ransomware recently as hackers have started using ransom cryptware that goes a level above using encryption.

<http://digit.in/RansomLink>

**HYPersonic  
Airliners?**

Concorde and Tupolev Tu-144 have known to be the only two civilian airliners that were able to break the speed of sound but both of these have been decommissioned since long. That hasn't been the end for supersonic airliners as researchers are creating faster ones.

[http://digit.in/Hyper\\_Sonic](http://digit.in/Hyper_Sonic)

# With hardware saturation, let the software wars begin!

Be it the Apple A9 or Qualcomm's Snapdragon 820, or even camera sensors etc, hardware is no longer the difference maker in consumer tech.

– By Prasid Banerjee

**L**ook down at your phone? Do you see those icons that look different from what they do on your friend's phone? Good. Now go and find out the list of sensors on the fitness wearable you really like and compare it to your second favourite. What do you see? They're the same right? Except in the app that comes with them. That's exactly what we're talking about here.

Qualcomm says its Snapdragon 820 is X% more powerful than older generations, as does Apple about its A9. The fact though is that hardware is redundant



today. Phones in a particular price bracket are essentially the same, separated only by their software gimmicks. There's much more to this though. In the world of incremental innovation, we stand at a point where the race for the best software technology is more important than ever.

**From UI to OS**

UIs have for the longest time been seen as measures taken by companies to differentiate their product from others, but it's not how good the MiUI looks that gives Xiaomi the edge. It's actually the processes in the background. There's a reason things like MiUI, Nubia etc. are referred to as OSs. It's because they're no longer cosmetic changes. They actually manage resources differently or add something else in the background. Here's how.

**Camera**

Ever wondered why the Moto Turbo, despite its 21MP sensor has a sub-par camera? It's because Google's stock camera app isn't good. It's simple and easy to use, but companies like Sony, Samsung, Xiaomi, LG, ZTE etc. have put in tons of research to

do what is needed on the software side. The best example of this in fact is Apple, which for a long time remained unparalleled in camera performance, despite a measly 8 megapixel sensor. It is also one of the reasons why megapixel count doesn't determine camera quality over a certain threshold.

**Memory Management**

Try using a Xiaomi phone running MiUI alongside a Motorola phone with its stock Android interface. You'll see that with no apps running in the background both phones seem to consume the same amount of RAM. But how can that be?

It's because Xiaomi replaces instead of layering. It takes the open source Android code and replaces various parts of that code, while keeping the base the same. As a result, MiUI doesn't consume extra memory. The stock Android camera app is not present on a Xiaomi phone and has been replaced by the Mi Camera app. The same is done by most other companies.

That should still not account for all the extra features Xiaomi provides though. And that is where MIUI's memory management comes in. It's what differentiates one

## FIRST CONTACT

 Everyone with even a little bit of inclination towards science and exploration is curious about whether alien life exists out there. But what if an unknown probe that doesn't belong to us enters our solar system looking for signs of life the same way our Voyager probes are exploring the darkness of space?

<http://dgit.in/AlienProbe>

## DATA CHECKING

 We as netizens collectively generate exabytes of data on a continuous basis but actually segregating the useful data from all the useless noise is a huge task. Intelligence agencies the world over rely on complicated algorithms to try and put this data to some use. Here's how it's done: <http://dgit.in/BDDataSearch>

## THE CHIP IN ME

 Biohacking involves altering the body by surgically implanting devices inside the human body to improve or add more functions. It's slowly gathering steam as some people are willingly implanting things like RFIDs inside their body. Read this article where a biohacker shares his experience: <http://dgit.in/BioHackExp>

## WHAT WENT WRONG?

 It's the age of startups as some gain a good foothold because of a really strong and growing community, while some just peak early, sputter and die. Quirky which is an invention based startup that brought some really useful ideas to the fore using their closely knit community filed for bankruptcy recently. Head here to learn what went wrong: <http://dgit.in/NotQuirky>



UI from the other and allows some phones to operate lag free, while others stumble. Of course, the hardware plays a role, but with the same hardware on two phones, the software is the difference maker.

It's an area where iOS is the undisputed king, and resource management is what let iPhones run at par with or better than any other phone on a mere 1GB of RAM. Of course Apple's vertically integrated system plays a heck of a role here, but let's face it, the company hasn't quite innovated in hardware since the A7 processor.

You might also want to consider Samsung here. Love it or hate it, Touchwiz is much better since the Galaxy Note 4, and that's thanks in no small part to what Samsung has done on the background.

These were just two examples though. There are many other ways that OEMs are trying to make software the real difference maker or differentiator.

## SoC is what SoC does

It's not just the OEMs though. Take the Qualcomm Vs. MediaTek battle for example. With its Helio series, MediaTek has a very able SoC to take on Qualcomm's Snapdragons. At the very high end, they may even be evenly matched, which brings

us to things like Corepilot. MediaTek's Corepilot algorithm is what can make its upcoming Helio X20 a winner.

Qualcomm also has talked about myriad software enhancements, the newest amongst which is its Smart Protect algorithm. The race is on, and while Qualcomm

has the lead, MediaTek is ready to pounce.

## To wearables then

The race to get the best software is perhaps the most important in this arena. When it comes to wearables, especially fitness gadgets, your sensors are exactly the same. This means that the companion app is what makes all the difference. Consider the Fitbit against a Jawbone for example. It's Jawbone's app that makes me like it more, while they both have exactly the same sensor.

Again, the mere look and feel isn't the sole differentiator here. It's the algorithm that determines when you're sleeping, when you're standing and so on. The wear-



ables arena is perhaps the most relevant example for hardware saturation and the importance of software.

## Let the software games begin

The war is on not just amongst OEMs, but everyone involved in the consumer tech business. Things like Apple TV and Android TV are really dependent on what developers choose to do with them. As revolutionary as Apple makes its TV box look, its overall interface is almost a replica of Google's Android TV. Having seen Android TV up front on the Sony W950C Android



TV, we can expect the same from Apple at the very least.

There's actually only one company that's talking about this at the moment, and that's Motorola. The company repeatedly says its devices are about the experience and not specs. Sadly, stock Android is no longer 'the experience' that gives the best which is what some would argue. Companies like Cyanogen have done well, as have OEMs and their UIs. Which is the reason why Motorola's argument is weak, but it's right in insinuating that software is the immediate future. If you want to make the best phone today you need the best software, period.

<http://dgit.in/software-wars> 

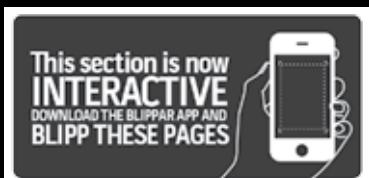
## WORLD SCIENCE FESTIVAL

A part of the Science Festival Foundation, the World Science Festival channel will quench your thirst for science



as you'll find everything here from dark energy to quantum biology, interesting experiments that will blow your mind and discussions that will leave you asking for more.

<http://digit.in/ScienceJoy>



To get all these links in one easy to read page, make sure you blip these pages from your smartphone.

## (PRODUCT LAUNCHES)

### XIAOMI MI 4C



After the success of the Xiaomi Mi 4i, the Chinese manufacturer has launched the Mi 4c for the Chinese market. Featuring a unibody polycarbonate shell and a 5-inch 1080p screen, it's powered by a Snapdragon 808 coupled with 2GB RAM. Price: ₹13,200

### YU YUPIX



YU YuPix is a pocket-sized portable photo printer that can be used to instantly print photos from any smartphone by installing the YuPix app which is available for iOS and Android. The printer comes with a 750 mAh and weighs just 272 g. Price: ₹6,999

### LENOVO Y700-17ISK



Lenovo pulled the wraps off its new gaming laptop – the Lenovo Y700-17ISK at the Lenovo India Gaming Week. It comes with a 17.3-inch 1080p display, 16 GB DDR4 RAM and Nvidia GTX 960M GPU while also providing a 512 GB SSD and a 1TB HDD. Price: ₹1,25,000

## PICTURE PUZZLE



ABSOLUTE  
TIMEPASS

## UNJUMBLE ON YOUR MOBILE



DOWNLOAD ➤ FILL SCREEN WITH IMAGE ➤ BLIPP IMAGE INTO LIFE!

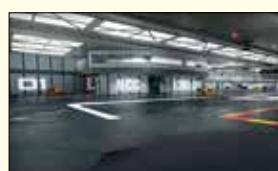
## Top 3 YouTube Picks

Make sure your boss doesn't catch you goofing off with one of these videos playing on your screen



### To Scale: The Solar System

A group of friends went on to create the first ever scale model of our solar system including all the planetary orbits in the Black Rock Desert. <http://digit.in/SOLSys>



### Enterprise-D Virtual Tour

VR technology is seeing a ton of advancement currently and what better way to experience it than by looking inside the USS Enterprise. <http://digit.in/EnterVR>



### Real life Emoji keyboard

If the extreme addition of emoji in our messengers wasn't enough, we now have a ridiculous 1000 key emoji keyboard to up the ante. <http://digit.in/EmoBoard>



80 per cent of Haskell libraries that use floating point expressions contain instabilities. This plugin fixes them all.  
<http://dgit.in/HaskellPlgn>

> code / creativity / community >

devworx >

# Getting F(#)nctional

**>>F# is the go-to functional programming option available to .NET developers; and is better than C#> by Kshitij Sobti**

**T**he # in its name makes F# a functional programming language that is part of the .NET family. Although, it is possibly one of the lesser-used and lesser-known language options available to .NET developers.

What this means is that you can start coding in F# using the free Community edition of the latest Visual Studio, or even using MonoDevelop (which supports Linux and OS X as well). Since it runs on .NET it can run wherever .NET can run.

Just like C++, C#, JavaScript etc. trace their syntax to C and its predecessors, F# can trace its roots in the ML programming language. In fact, you will find that all the code in this article will run in OCaml with minimal modification. OCaml is another language descended from ML, and might be of interest to you if you like F# but don't want to get into .NET.

The F# language is vast, and it's impossible to cover its entire syntax here. So instead we will focus on what makes it different.

## Setting up F

Getting a hold of F# is quite easy, as they are clear instructions available on the F# website: <http://fsharp.org/>

On Windows you can install the latest version of Visual Studio Community edition and you will be able to create F# projects. It will automatically install the F# tools.

Another option is to use MonoDevelop, which is available for Linux and OS X as well. Xamaran Studio, a commercial version of

MonoDevelop is also available to OS X and Windows users.

You can get the F# compilers and interpreters for your Linux distro as well if you just want CLI tools.

If you have just the F# compiler installed, simply create a text file ending with '.fsx' in your favourite editor, and type your code in that. This code can then be compiled with the F# compiler located at: `C:\Program Files (x86)\Microsoft SDKs\F#\4.0\` Framework\4.0\fsc.exe

The interactive interpreter is available on Windows at: `C:\Program Files (x86)\Microsoft SDKs\F#\4.0\` Framework\4.0\fsi.exe

On Linux and OS X these commands should be available as fshasrp and fsharp respectively.

You should also be able to find F# plugins for the free Atom code editor and Sublime Text.

## What is a functional Language?

There can be entire books dedicated to elaborating what exactly is a functional language and how F# figures into all of it. Simply put, functions are central to a functional language, such like objects are in an object-oriented language.

Functions are first-class members of a functional language, meaning that they can be passed around to other functions, stored in variables, combined and operated on just like any other value.

Functions can accept other functions as parameters (such func-

## \*Coding Matters



### \*Windows 2016 Docker Support

>>The next server edition of Windows will support add support for containers and will work with Docker.

<http://dgit.in/Win16Server>



### \*Epic Games Frees Art

>>Epic Games, the creator of the Unreal engine just released art assets from a cancelled Infinity Blade game that are entirely free to use.

<http://dgit.in/FreeInfBlade>



### \*VP9 Coming to Edge

>>VP9 the open-source and free video format by Google will soon be supported by Microsoft's Edge browser. The only major browser left now is Safari.

<http://dgit.in/VP9Codec>

```

x@ti: ~ x@ti:~/opensuse ~
$ ocamlopt
  OCaml version 4.02.2

# type colour =
| Red
| Green
| Blue
| Other of string
| Combination of colour * colour
;;
type colour =
| Red
| Green
| Blue
| Other of string
| Combination of colour * colour
# let r = Red
# let g = Green
# let cyan = Combination(Blue, Green)
;;
val r : colour = Red
val g : colour = Green
val cyan : colour = Combination (Blue, Green)
# 

```

With minor changes (just remove capitals from variable names in some cases) you can have most of the code from this article running in OCaml.

```

x@ti: ~ x@ti:~/opensuse ~
$ fsharp
F# Interactive for F# 4.0 (Open Source Edition)
Freely distributable under the Apache 2.0 Open Source License.

For help type #help;;
# let x = 11;;
val x : int = 11
# x <- x + 1;;
val x : int = 12
# x <- x + 1;;
val x : int = 13
# x <- x + 1;;
val x : int = 14
# 

```

F# Interactive is a great way to get started with F# code. Always remember to type ';' after a block of code to tell the interpreter to execute it.

tions are called higher order functions) and they are an important part of functional programming. Functional languages also favour immutability and functional purity.

### What is Immutability

While in most object-orientated and imperative languages when you constantly change the values of variables to perform computations, functional languages go for a more mathematical route, once you define a value it can't change.

Let's see this in action, by getting things wrong. Open the F# interactive console and type the following:

```
let x = 11;;
```

Note the double semi-colon at the end of the line. You do not usually need this while coding in a text file, however while working in the interactive interpreter it is required to tell the F# interpreter where an expression ends. You can print the value of x at any time by simply typing x;; at this prompt.

Now 11 is a rather dull number, let's try to set x to something cool, like 42. In most languages this would be as simple as setting x to 42 or adding 31 to it. Let's try both:

```
x = 42;;
x = x + 31;;
```

In both cases you should see output like:

```
val it : bool = false
```

This is probably not what you were expecting. In F# the above two lines are actually checking if x is equal to 42 or if x is equal to x + 31, both are obviously false. This is equivalent to x == 42 or x == x + 31 in languages like Java, C++ etc.

In fact, since 'variables' don't really vary in F# they are generally called identifiers, and by using them, you are said to be binding a value to an identifier.

There are ways to change the value of a variable in F# using the syntax x <- 42, however, even that will fail in this case since x is immutable by default. In fact try it right now and see F# complain.

It is possible to declare x such that it can be modified but we won't go into that here, that's not what functional programming is about. But you are free to explore that on your own.

### What are Pure Functions

Pure functions are another core principle of functional programming languages. While most functional programming languages allow for some 'impure' functions, they highly emphasise writing functions that are pure.

A pure function is one simply takes its parameters and produces a single output. It is not affected by anything outside the function, and it affects nothing outside the function.

This is similar to how mathematical functions work. You don't expect the sine of a value to change when you calculate it multiple times, nor do you expect the value of the sine function to depend on the previous value of sine.

Pure functions don't use or change global variables or the parameters they receive. Technically, multiple calls to a traditional printf function will produce output in different lines, thus it's output is dependent on previous calls.

Similarly date / time / random number generator functions are impure because they return a different output each time. So obviously its impossible to be completely pure without entirely crippling your software.

If you're wondering why it's advantageous to put these restrictions on yourself, know that such a design makes it very easy to parallelise your applications and make them multi-threaded.

### Functions

Since we are looking at a functional language, it's only fair that we start by looking at functions.

You'll be pleased to know that creating a function is very simple:

```
let sum a b =
```

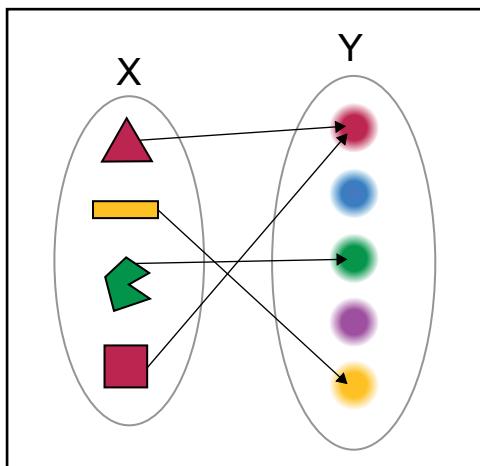
```
a + b
```

Indentation matters in F# just like in Python, although you could have written the above in a single line if you wanted. Remember that in the interpreter you need to type;; after typing some code to evaluate it, simply pressing return isn't enough.

A core facet of functions in F# is currying, or partial application of functions. This allows you to provide the parameters to a function in parts rather than all at once.

For instance, if a function needs four parameters, you can provide two of them, and rather than raise an error you will get back a function that can take the rest of the parameters.

Imagine we have a function to calculate the simple interest based on the rate and time. There are many accounts but the rate remains



Functions in functional languages try to model mathematics. So while two different inputs can give the same output (square of both -2 and 2 is 4), a single input should not have multiple possible outputs.

the same. Rather than provide a rate each time, we can supply that once and use the result. Let's see it in action:

```
let simple_interest rate time principal =
    principal * time * rate / 100
```

```
let si_4pc = simple_interest 4
```

```
let account1 = si_4pc 3 1000
let account2 = si_4pc 2 3000
```

In the above code sample, we create this simple interest function and supply only one parameter. This returns a function that is the `simple_interest` function with a rate of 4 per cent applied. Then we can use this new function `si_4pc` to calculate the interest for different time periods and principal amounts.

Another brilliant thing about F# functions is how easy they are to combine. In most languages if you had to take a value and apply multiple operations to it in series you would do something like:

```
result = sum( range( square( double( x ) ) ) )
```

Now this can be a little confusing since the operators appear in the opposite order in which the data is flowing. First `x` is doubled, then squared and so on. In F#, the same is done in this manner:

```
let result = x |> double |>
    square |> range |> sum
```

Here F# will pass `x` as a value to `double`, pass the result of that to `square`, the result of that to `range` and finally to `sum`.

If you wanted to make a new function that combined these functions you could do that as simply as:

```
let doubleSquareRangeSum = double
    >> square >> range >> sum
```

# \*pointers

>> Interesting developer news



## \*Introduction to Functional Programming

>> If you're interested in functional programming, this course at EDX.org should get you started.

<http://dgit.in/EDXCourse>



## \*F# and Xamarin for Mobile

>> This video both introduces F# and also shows how to use it to create Android and iOS apps.

<http://dgit.in/XamarinApps>



## \*F# for Web Apps

>> If you're wondering how to server-side web apps using F#, let this video teach you how.

<http://dgit.in/WebDeveApps>



## \*New features of F#4.0

>> Here's a quick roundup of six new features of F# 4.0 that you'd be interested in.

<http://dgit.in/QuickFSharp4>



## Records

While records are quite common in other programming languages, A record in F# is similar to a struct in C / C++; here is how to make one:

```
type Point = {x:int; y:int}
```

Here, we declare a new `Point` type that has two fields, `x` and `y`. The great thing now is that in F#, any structure you create that matches this pattern will automatically be a `Point`! For instance:

```
let p1 = {x1=11; y1=12}
```

This is automatically a `Point`, despite the fact that you never explicitly declare it as one. You can confirm this by typing it in the interpreter.

You can access these fields as you'd expect with `p1.x1` and `p1.y1` but F# has a better way:

```
let [x=x1; y=y1] = p1
```

This will assign the `x` field of `p1` to `x1` and the `y` field of `p1` to `y1`. You could use this as part of a function, for example:

```
let sum_coords [x=x1; y=y1] =
```

```
x1 + y1
```

This function takes a point, and sums its `x` and `y` ordinates.

## Discriminated Unions

Discriminated Unions are something you will only find in functional languages. They are a great way to define complex types that combine multiple other types.

For instance, you might define a `Colour` type as follows:

```
type Colour =
    | Red
    | Green
    | Blue
    | Other of string
```

Here, we are defining `Colour` as a new type that can either be `Red`, `Green`, `Blue`, or `Other`. In case it is `Other` we can provide our own value. All of the following are of type `Colour`:

```
let g = Green
```

```
let cyan = Other "cyan"
```

Let's make this `Colour` type more interesting by allowing for combinations of colours:

```
type Colour =
    | Red
    | Green
    | Blue
    | Other of string
    | Combination of Colour * Colour
```

With the above we can define colours as:

```
let colour1 = Combination(Red, Blue)
```

```
let colour2 = Combination(colour1, Green)
```

The `Colour * Colour` above allows use to make a pair of Colours, as you can see, we have a recursive type here where a colour can be a combination of colours!

We'll look at one final example, that of a simple mathematical expression involving integers:

```
type Expression =
| Number of int
| Sum of Expression * Expression
| Product of Expression * Expression
```

Here the “\*” does not mean product, but instead it signifies a combination or a tuple. What the above code means is that an Expression is a type of data that can one of be:

- An integer Number
- A Sum of two Expressions
- The Product of two Expressions

As you can see, this definition is recursive. So an Expression be a Product that is a combination of a Sum Expression and a Number Expression. The Sum in turn is a combination of two Number expressions. You can see this in action below:

```
let exp1 = Sum(Number 1, Number 3)
let exp2 = Product(exp1, Number 4)
```

In the above code exp2 is equivalent to: Product (Sum (Number 1,Number 3),Number 4)

Now you might be wondering how to use these Unions, and that happens to bring us to one of the most powerful features of F#, pattern matching. We'll see how we can use pattern matching to evaluate this above expression.

### Pattern Matching

There is a good reason why we haven't looked at even the basic if-then-else syntax for F#, and that is because a much better alternative is available via pattern matching.

Pattern matching allows you to branch code paths based on the value encountered, and this matching can look into the data structures themselves to make such a match. Think of it like switch-case on steroids.

Let's look at an example where we want a function to return the string “one” if it is provided the integer 1 and to return the string “many” otherwise. Normally you'd use an if-then clause here, but we have something better:

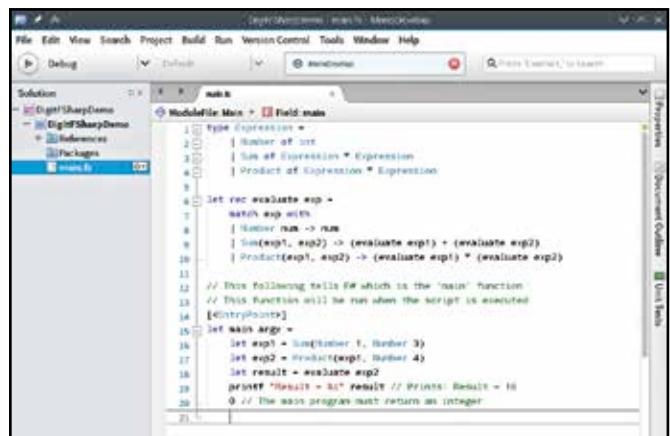
```
let oneOrMany x =
  match x with
  | 1 -> "one"
  | _ -> "many"
```

If you were to now run oneOrMany 2 the function would return “many”. Each branch above handles one case, and here we have two. The first one matches x with 1 while the second one \_ is a wildcard that matches all other cases.

Now imagine if we had to have three cases, the first where x is 1, the second where it is less than 10 and the third where it is 10 or more. If you're worried that we'd have to write a separate case for all numbers from 2 to 9, don't worry F# has something better:

```
let oneFewMany x =
  match x with
  | 1 -> "one"
  | a when a < 10 -> "few"
  | _ -> "many"
```

It is also possible to have patterns like | 2 | 3 | 4 to match all those cases in one branch. Pattern matching can even look inside records, lists and Unions. Let's quickly look at how matching records is done in F#:



MonoDevelop on Linux being used to develop our expression evaluator.

```
let quadrant p =
  match p with
  | { x = x1; y = y1 } when x1 >= 0 && y1 >= 0 -> "I"
  | { x = x1; y = y1 } when x1 < 0 && y1 >= 0 -> "II"
  | { x = x1; y = y1 } when x1 < 0 && y1 < 0 -> "III"
  | { x = x1; y = y1 } when x1 >= 0 && y1 < 0 -> "IV"
  | _ -> "?"
```

Here p is a Point as defined above in the section on Records. This function will look at the ordinates of the Point p and return which quadrant it's in. If you wanted to match points where x is 2 and y can be anything, you could match it as | { x = x1; y = \_ } -> doSomething.

Now let's do something really exciting, let's write a function that will evaluate our Expression type as defined in the previous section. You'll find that the function is surprisingly concise:

```
let rec evaluate exp =
  match exp with
  | Number num -> num
  | Sum(exp1, exp2) -> (evaluate exp1) + (evaluate exp2)
  | Product(exp1, exp2) -> (evaluate exp1) * (evaluate exp2)
```

Now try using this function on the expressions we created in the previous section and you will find that it works! Note also that this function is being declared as let rec instead of just let as with other functions, the rec here is to tell F# that the function is recursive and as such should be able to call itself.

The above code just makes sense when you think about it, because that is how you would logically solve any expression.

### Conclusion

There is still so much more to F# that we can't go into in this article, but hopefully you have enough of a taste to get you excited about it!

Just to give you a taste of some things you are missing out on, in F# you can create measurement units such as cm, m, inch, foot etc, to ensure that you can't add cms and inches. You can avoid null pointer exceptions by using optional types, and threading and asynchronous operations are built-in.

We haven't even looked at arrays and lists here and both of those are an important part of any language, and they have some special syntax when it comes to F#.

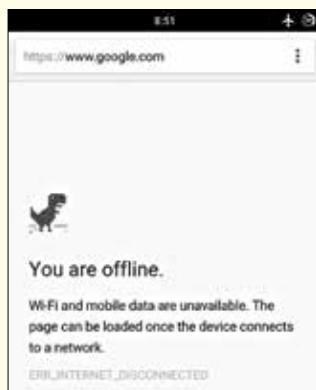
As we've mentioned before, F# is a .NET language, so it already has the reach and capability of the .NET platform. If you are already engaged with that ecosystem, F# is well worth trying out. >

## GOOGLE APPLICATIONS (ANDROID)

### 1. Google Chrome browser App:

#### Kill time till your mobile network reconnects

Did you know, you can even kill time on the google browser if your internet connection suddenly becomes unresponsive in the middle of something. On the Google Chrome browser when you happen to see that 'You are offline' message, simply tap the dinosaur and you have an entertaining tap and jump game ready for you.



The jumping dinosaur

#### Save up to 40% data

A small little setting in the advanced section of the settings tab can save you both time and expensive internet data. When enabled, chrome is capable of compressing webpages ena-



Data Saver



Google applications (Android) ..... 35

iOS 9 ..... 37

*Tips & Tricks has its own page numbers, and does not follow the rest of the magazine's page numbers. This is done to ensure that you can cut out and save T&T in a separate folder for later reference.*

bling up to an astonishing 30-40% data savings. To enable Google Chrome's inbuilt data saver all you need to do is head to Settings > Data Saver (under Advanced section) and enable this feature.

#### Print wirelessly even through a USB printer

You can now print wirelessly even from a simple USB printer provided you have your Google account logged in both your phone and your laptop that is connected to the USB printer. Both the device connected to the internet you can indirectly send a print command to the printer via your laptop or PC. Just add printers to your google account and you're ready to go. Print from anywhere using Google Cloud print.

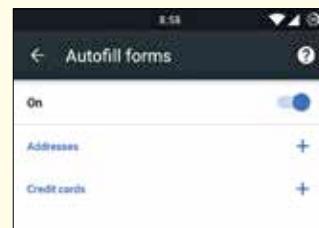
#### Remote Desktop Extension: Control your PC over the internet

In a similar way, you can control your PC with your phone

provided both are connected to the internet and logged in with the same Google account. This controlling is again done via the Chrome Browser itself. It's simple and free. All you need to do is download the extension on your browser on the PC and follow the steps for setting up. Note: You'll need to download an additional Chrome Remote Desktop application on your phone for this to work.

#### Autofill lengthy forms with saved addresses

Tired of having to type your addresses and credit card data over and over again for ever form you fill? Save that extra time and effort by using Google Chrome's autofill feature. Simply head over the 'Autofill forms' in the



Autofill to save that extra effort

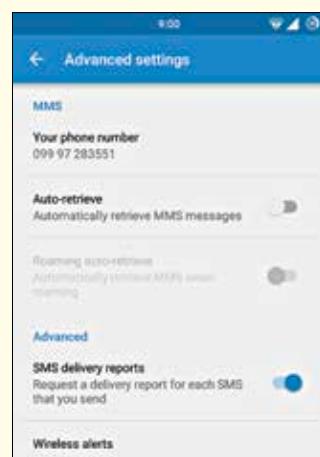
App Settings and save all your addresses and card data.

#### Touch to search: Search topics without leaving the page

The Google Chrome App also allows you to learn about topics on websites without leaving the page. Touch to search sends a word and its surrounding context to Google Search retuning definitions, pictures and other details. Just long press and select your search term. To enable this feature head over to the privacy settings. Will definitely leave you wondering why they kept this feature under the Privacy tab.

### 2. Google Messenger App:

#### Get a notification when your text reaches the recipient



Delivery Reports

Ever wondered about the surety of your messaging reaching the recipient? Just follow these steps: Settings > Advanced > SMS delivery reports. Now, set the slider to the right and get a notification for every time your SMS gets delivered.

#### Archive important private messages

This option enables you to save those important messages



without letting them be visible in your main conversations list. Even if you happen to use the delete all conversations option, these archived messages are safe. To try this, open any text message, tap on the three dots options menu and select 'Archive' from the list.

### Block text messages from particular numbers

Simply long press the conversation of the sender you wish to block and see a row of icons pop from the top of your screen. To block this sender, just tap the



Block and mute senders

block icon towards the right side of the row.

### Turn off text message notifications from a particular sender

In a similar way as above, to mute notification from a particular sender, when the row of icons appears, just tap the crossed bell sign to mute notifications. Follow the same to later un-mute them too.

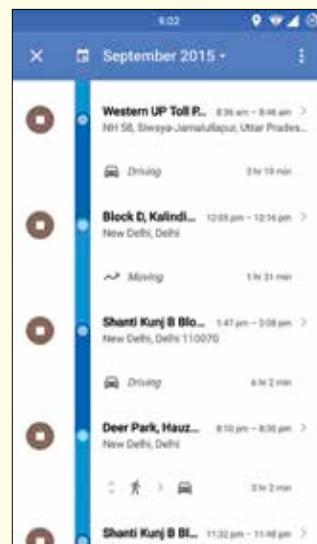
### 3. Google Maps App: Timeline: Track yourself

Just slide in from the left when you have the Google Maps App

opened and you have your timeline option visible. Ever visited a place and forgot the address? Don't worry about asking the directions again, just go to your timeline and the exact locations you have visited from day to day and their respective timings all in front of you. Yes, the feature of location reporting needs to be ON. So now you're always tracking yourself.

### Improve your location accuracy

Did you know to improve your location accuracy on google maps? You'd be surprised to

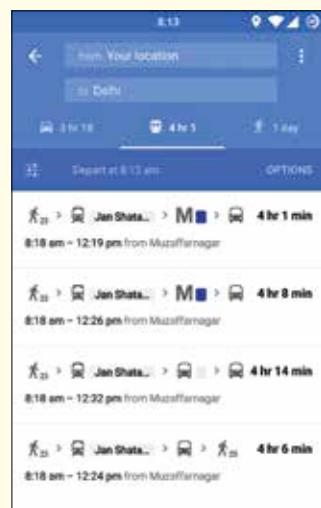


Overview of the 'Timeline'

know that, even when not in use, the WiFi scanning if turned on, is of great help. Your phone's location is more precisely matched using the WiFi antennas inside your phone. To enable this head over to Wifi and from the three dot menu click on Advanced. Now just enable 'Scanning always available'.

### Get real time public transport status and schedules

If public transport is your daily from of commute, you'll literally be thanking Google for this one. For timings and availability options, when searching for

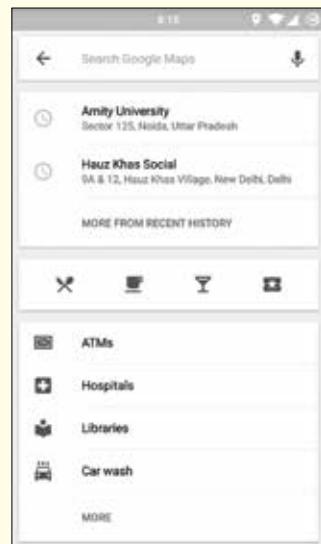


Public Transport updates

directions, simply change tabs from driving to public transit and view all possible public transport options to your desired location. You can even customize your search from the three dot menu.

### Directly search for nearby cafes, restaurants and other POI

All you need to do is tap on Search when on the Google Maps App homepage. You will see a row of graphic icons for cafes restaurants and other POI. What's more, you can even search for nearby services in a similar way from the list or by typing your interest in the

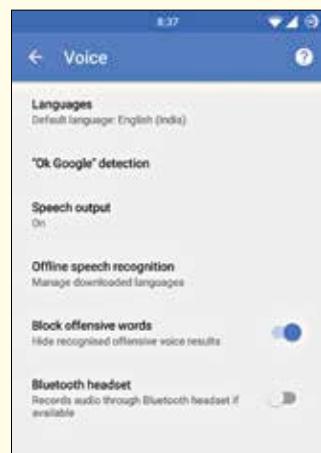


Search POI on Google Maps

search bar. Just write ATM in the search bar and a list of all of the nearby ATMs will be displayed within a jiffy.

### 4. Google Search App (Google Now): Search by voice when offline

Ever wanted to search with voice and happen to be offline? Yes, its possible. When you have the Google Search App head over to app's Settings > Voice > Offline Speech Recognition and download the language of your choice from the list. Note: This feature currently supports only a limited number of languages and dialects.



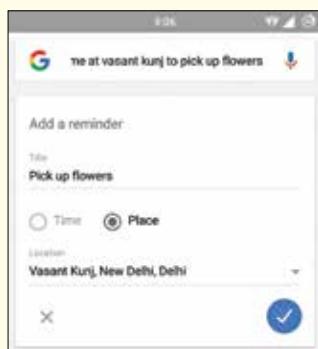
Offline Speech Recognition

### Location based reminders

Google Now can even set reminders for you that are triggered only when you're at a particular location. For example you can say 'OK Google, remind me at Vasant Kunj to pick up flowers'. It is as simple as that.

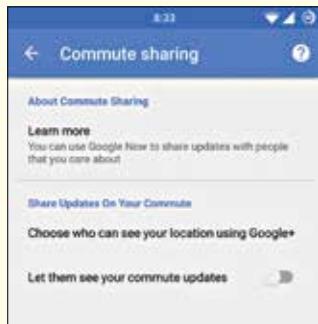
### Share real time updates of your commute with friends and family

You can share your commute with your friends and family from the Google app to let them know when you're heading home. To turn on this feature, open Google app > Settings > Accounts & privacy and tap



#### Location based reminders

on commute sharing. Turn 'Let them see your commute updates' to on and then just enable the option 'Choose who can see your location'.



#### Share your whereabouts

### Disable speech output for search results

Don't want the Google App to speak out your search results? When in the Google Search App look for 'Voice' settings and when you tap on 'Speech output' select the hands-free only option.

### 5. Gmail App

#### Set 'reply all' as default

When using the Gmail App, head over to Settings > General Settings and make sure the checkbox next to the 'Reply all' option is ticked. This makes the reply all option as the default for message replies.

### Automatically classify emails into categories

A feature Gmail has been using since long. To choose the

categories you wish to classify your inbox into, Open Gmail App > Settings > your Gmail account > Inbox categories; and take your pick.

### Toggle swipe between archive and delete

Fond of keeping your Gmail inbox clean? Delete those unwanted emails and archive the important ones by a simple swipe across the conversation. To choose the default swipe action of the Gmail app, firstly enable the Swipe actions checkbox in the General Settings of Gmail app. Then choose between 'archive' or 'delete' from the Gmail default action on the same settings page.

### Search smarter

Search within your inbox with more refined results. For example, try entering "older\_than:1y" or "older\_than:1d" in the search box to find messages more than a year or a day old in your Gmail.



#### Inbox Categories

### iOS 9

iOS 9 is here, and with it, Apple has added a number of functionality features to its latest version of the mobile ecosystem. While it does not give any major visual

overhaul, iOS 9 adds a number of features that will make using iOS devices even more convenient. A number of features that are available up front include Apple's Proactive, a more intelligent Siri, Spotlight search, iBooks, Wallet, filmstrip photo album view, and of course, Apple Music.

Apart from the updates that are there upfront, iOS 9 has a number of neat tricks rolled up its sleeves. Particularly for the iPad, a host of usability and productivity features have been added. For instance, the most-highlighted split-screen multitasking feature really adds to your convenience if you're collating emails and noting down data on Notes. You can choose to keep your email window open to the left of the display, switch to split-screen view and swipe from the right edge to bring up Notes, which itself has a host of new features.

Another neat addition to iOS 9 is to allow streamed or local videos to keep playing in a smaller window at the bottom-right of the screen, hence letting you carry on with your other tasks in separate apps, in the background. Here's taking a look at how to make the most of the new features that Apple has added to iOS 9, which is currently seeing fast adoption among the vast iOS user base.

### Enable 6-character passcode

While upfront it may not seem to be of titanic importance, adding two more digits to the unlock passcode automatically adds nearly one million more chances of what your passcode can be - a significant upgrade for users demanding more security in their usage environment. To access it, go to Settings - Touch ID & Passcode. It is here that you will be asked to choose your new, six-character passcode



#### Better security with six digits

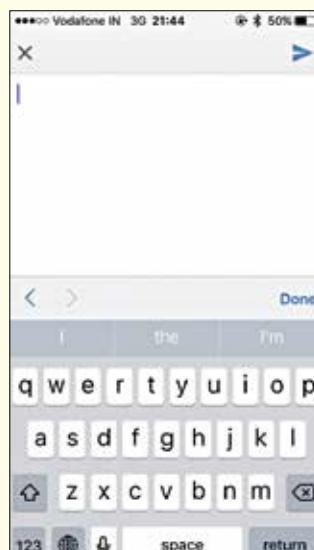
alongside the long-standing fingerprint identifications.

### Choose keyboard case toggle

Until iOS 8, shifting from lowercase to uppercase (or vice versa) made no effect on the laid-out keys of the virtual keyboard. Fixing that, Apple has introduced a case-shifting keyboard with iOS 9. A number of Apple users, however, have stated that the lowercase lettering does not really look appealing in comparison to the neat layout of the pre-existent keyboard. As a result of feedback collected



#### Enable lowercase keys



#### Lowercase keys are now visible

across its Public Beta programs, Apple has included a switch to give users an option to choose whether or not to toggle the case appearance of the keyboard.

To use this, go to Settings - General - Accessibility - Show Lowercase Keys. You can choose to switch it on or off, depending on whichever way that seems convenient for you. While the lowercase letters do appear slightly more spaced-out and large, the appearance is not really jarring, and many users might actually prefer to see lowercase keys, which makes typing more convenient, visually.

#### Select side-switch functionality

The side switch has become multifunctional, and can now toggle between orientation lock and its native mute/ringer selection. Previously, the orientation lock on iOS devices was built into the Control Center, which could also be accessed when the device was locked. To enable multi-functionality of the side-switch, go to Settings - General - Use Side Switch To. You get two options to select: Lock Rotation and Mute.

For users who prefer typing in portrait mode, frequently play videos on the device and

keeps the phone in either mute or ringer mode all the time, the hardware switch will come particularly handy as switching orientation lock in the middle videos will not require the Control Center to be swiped up, thereby pausing playback.

#### Enhance boring, old Notes with custom scribbles

Notes is one of the biggest functionality upgrades that Apple has given to any of its native applications. While the option to add photos and videos to text was added previously, the iOS 9 rendition of Notes allows you to add titles, headings, sub-headings, bulleted lists, checklists, bold/italicisation of content, and scribbling.

#### Select Title, Headline and Body text format

By default, the structure of notes will have the first line of a note formatted as title, following which it shifts to body. You can change parts by double-tapping on the line that you want to change, and then tapping on the Aa icon to open up the list of writing types. These represent titles (written in bigger, bold-type font size), headlines (smaller than titles, bold) and body (reg-



The new Notes screen

ular). You also get the option to further toggle the font type, by double-tapping on the desired area and hitting the right arrow to bring up the 'BIU' option, which bolds, italicises and/or underlines the desired text area.

#### Choose bulleted lists and Checklist

The list of writing types also has three different bullet lists, and the option to include a checklist in your note.

#### Add custom scribble and signatures

Additionally, you can now include a custom scribble to your note. Tap on the + symbol right above the keyboard, and tap on the scribble icon to open up the scribble window. There are three pen options, and ruler and an eraser to add basic illustration/custom signature to the note. Once done, tap on Done, and your illustration will be added at the bottom of the note. You can also choose to place the scribble at any point of your note, by hitting return and continuing typing on the same note.

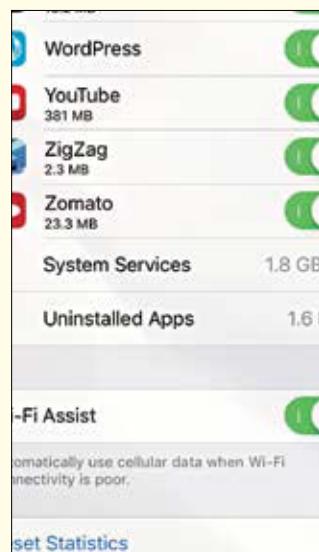
#### Conserve battery with Low Power mode

The Low Power mode is a particularly welcome addition to the iOS ecosystem, with the dubious battery life of iPhones and iPads. The Low Power mode stops push mail, background app refreshing, automatic downloads and certain visual enhancements to preserve battery life. You can choose to keep it on at any given point, and is indicated by the battery bar, which turns yellow when in Low Power mode. By default, Low Power mode will get switched on when your iOS device's battery life hits 20 per cent or below. While being charged, the Low Power mode is switched off by default once the device is charged up to at least 80 per cent.

To manually access the setting, go to Settings - Battery - Low Power Mode. The power saving mode significantly increases the battery life of your device, which is already enhanced by iOS 9 which is relatively lenient on resources in comparison to iOS 8. Keeping Low Power mode all day easily sees an iPhone 5s through an entire day's usage with WiFi always connected, and returns home after a 12-hour day with almost 20 per cent power left. A notable improvement.

#### Enable WiFi assist for seamless connectivity

Keeping WiFi assist switched on will automatically switch you to cellular data when WiFi signal strength and reception is poor,



Switch on WiFi Assist

thereby giving you seamless connectivity. Alternatively, you can choose to switch off WiFi assist, to conserve cellular data. The WiFi assist will allow seamless transition of networks, so that you don't have to worry about constant network drops.

To access this, go to Settings - Cellular. Scrolling down to the bottom of the page will pop up the WiFi Assist option, which can be toggled on/off.

Digit is hiring.

If you think you have what it takes to put words onto this page, write to us at [editor@digit.in](mailto:editor@digit.in)

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Learn how to hide your files from the prying eyes of hackers – and inquisitive mothers

**Visit 44 National Parks**

You can visit 44 national parks from the comfort of Google Street View.  
<http://digit.in/44Parks>

# This month we have a hot running GPU, annoying script errors in PDF software and a glitchy browser to fix...

For all the times when you're stuck between a rock and a hard place as far as technology is concerned, we're here to help you troubleshoot it all. Just follow our trail of breadcrumbs and you'll be sorted.

## Q Browser trouble

Hi Team Digit, I've been a Firefox user for as long as I've known now and although I've tried out other browsers from the competition, I've always ended up using Firefox no matter what. Recently when I opened it, the images and icons displayed on the page looked distorted while the text looked absolutely fine. I opened other software including browsers to check if the issue was seen everywhere and luckily enough, they all seem to show the page without any issues. What might be the reason for this? Can you help me fix it please?

—Faiz Shaikh

**A** Distortion of picture elements on a web page in Firefox is a known issue and is related to graphics hardware acceleration. Glitches related to graphics hardware acceleration have been known to crop up every once in a while ever since Firefox added this feature. Every new update of the browser fixes some or the other known glitches and so your first course of action is to check whether Firefox is up to date. If it isn't updated then go ahead and update to the latest version and also update the graphics drivers of your system. Once done, follow these steps:

- Open Firefox and click the menu button that's symbolised by three lines stacked one above the other then select Options;
- Now select the Advanced panel > General tab;
- There you'll see an option to check or uncheck "Use hardware acceleration when available". Just

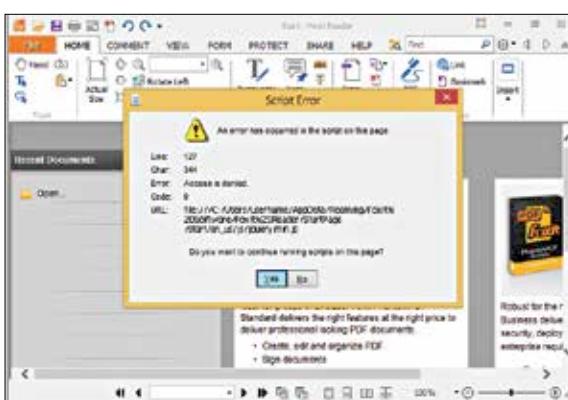


Only the images are distorted but the text looks fine

uncheck this option and move forward;

- Once done, you'll have to restart Firefox and check whether the issue that you were having with icons and images still persists;

Ideally, disabling hardware acceleration will fix the problem that you're having and the page should look normal now. If you're done updating your graphics drivers, you can go and enable hardware acceleration again to see if it works fine, then.



Foxit Reader's jquery.min.js related script error

## Q Foxit is broken

Hello Digit people. I've recently started reading Digit and I find it really informative so props to you guys. I've been having a weird problem with Foxit reader lately and I can't seem to get around it. I'm facing this problem in a fresh install of Windows 8.1 which is all the more confusing for me since I'm just starting to learn my way around computer related stuff. Right when I fire up Foxit Reader, it throws up an script error message with the words "Access is denied" and I see a URL below the error message that points to: "file:///C:/Users/username/AppData/Roaming/Foxit%20Software/Foxit%20Reader/StartPage /start/en\_us/js/jquery.min.js"

In order to go past this, I clicked on 'Yes' as well as 'No' but the error shows up again when I relaunch Foxit Reader. Is there a way to fix this as I find it really annoying? Please help.

—Abhay Puri

**A** It seems like you're using one of the first releases of Windows 8.1 and haven't updated it yet. Firstly, head over to Windows Update and install all the updates that are available. Once you've updated your OS, you should then go ahead and update to the latest version of Foxit Reader as well. Check if the problem persists and if it does, then you'll have to follow the steps below in order to disable the script error that you're seeing in Foxit Reader:

- Launch Foxit Reader and then head over to File menu > select



## Not so Encrypted!

MS researchers claim to crack encrypted cloud database with simple old trick.  
<http://dgit.in/MSCrack>

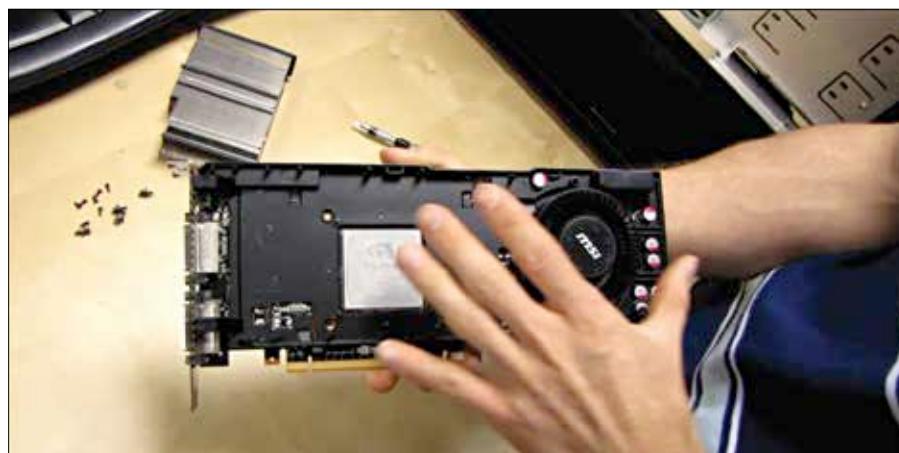
Q&A

‘Preferences’ or you can do the same by using the shortcut: “Ctrl+K”;

- Once you’re inside the preferences menu, Go to General > Select Application Startup > In that, uncheck the “Show Start Page” option;
- Next, click “OK” and you’ll be done.

### Q Hot GPU

Dear Digit, like every avid PC gamer out there, I’m crazy about gaming and I’ve been playing games on my assembled system since the past six-seven years now. I have a habit of keeping everything clean and by everything, I mean my PC mostly which is why I’ve taken good care of my system by regularly cleaning its innards.



You'll need to open up your card to clean it properly

Currently my PC is running smoothly without any hiccups but I used GPU Temp to take a look at the temperature of my GTX 580 and it turns out that it's running really hot (at 93°C) under full load scenario even when the fan is spinning at 100 per cent. I had last checked its temperatures about a year ago and it was fine then. I also researched on a few forums and saw that people having the same GPU are not seeing high temperatures for their graphics cards like I am. Since I bought the card from overseas, its warranty isn't applicable here and so I only have the option to figure out what's the reason for such high temperatures and then do something to fix it. It still serves me well and I can't afford it to go kaput. If you can please shed some light on what might be wrong with my GPU, that'll be really helpful?

– Kapil Joshi

**A** The maximum temperature limit for the GTX 580 is 97°C and that's the absolute max. Ideally, if a GTX 580 is running under full load, it should maintain a temperature of somewhere between 80°C-85°C. This means that your card is definitely running around 10°C hotter. You haven't mentioned what's the ambient temperature in your room because the temperature of components inside your system can vary greatly depending on the ambient temperature. Also, you didn't say if you've overclocked your GPU because that can be a reason for an increase in its temperature.

Since you've been using that GTX 580 for many years now, dust might've accumu-

lated under the shroud of the GPU and even on the fins of the cooling fan which can be the primary reason for the rise in temperature. It's also possible that the thermal paste between the GPU plate and the cooler might've become hard and ineffective.

If that's the case, you will have to disassemble and clean your card thoroughly to get rid of all the gunk that might've accumulated in it after all these years. You'll also need to get a tube of thermal paste. Get something like the *Arctic Silver 5* so that you can reapply the TIM after cleaning out the residue from the old paste. If you don't know how to go about disassembling your GPU, you can easily head online and refer a video for the same like this one:

<http://dgit.in/linusGTX580>

Let us know how it works out for you. 



Open Up,

**i**  
ball LAPBOOK

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iBall Laptops.

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Visit: [iball.co.in/LapBook](http://iball.co.in/LapBook)

Email: [sales@iball.co.in](mailto:sales@iball.co.in)

Call: 022-3081 5100



## Wrap your Cables.

Are your mobile cables getting damaged?  
Here's how to wrap your cable in nylon.  
<http://dgit.in/CableWrap>



## Facebook M

The messenger app receives a Siri-like personal assistant in the app. Read more here: <http://dgit.in/facebookm>

# Hiding files like Mr. Robot

We know you have many files to hide and creating recurring folders on your hard drive isn't exactly the best possible way. Read on to find out how you can hide your confidential files – be less of a zero and more of a one.

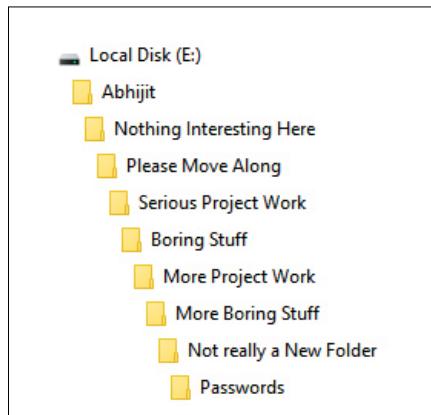
Abhijit Dey

[abhijit.dey@9dot9.in](mailto:abhijit.dey@9dot9.in)

You might have developed a healthy practice of creating strong passwords for your online accounts. By strong passwords I mean the ones that include lowercase, uppercase, numbers, special characters and on dictionary words. Such passwords aren't really easy to remember so you end up creating sheets or simple text files to store these passwords, which seriously isn't the smartest way.

Not just a critical password sheet, you might also have sensitive financial documents, personal images or even your next big million dollar plan stored in your hard drive that you wouldn't want anyone else to access. If you're really concerned about the discovery of data stored on your computer but want to hide them in plain sight, you can rely on steganography tools. Steganography is the method of hiding information within various data extensions across images, audio, video etc. If you have watched the popular TV show Mr. Robot, you must have wondered how Elliot, our righteous vigilante hacker, stashes away all his acquired sensitive data into DVDs (not a spoiler). To those who haven't watched the show yet, we highly recommend. In the show, Elliot uses a steganography tool called DeepSound that lets you hide any type of file within audio formats across flac, mp3, wav and wma files. Here, we'll talk about how you can do the same

and even further go an extra mile to hide your data just like Elliot.



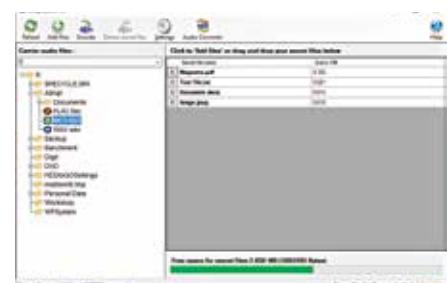
### Download and install DeepSound

DeepSound doesn't have a big download size (~3MB). You can visit <http://dgit.in/DpSound> and download the installation file. Installation is a breeze and you don't have to worry about custom settings since no third-party software is bundled with DeepSound.



### Hiding data

With the DeepSound interface open, you will notice the section labeled Carrier audio files. In this section, you have to browse to the directory of the audio file inside which you intend to hide your files. The Secret files section is where you will add the secret files within the carrier audio file. Once you navigate to the carrier audio file, DeepSound will calculate the amount of free space available. This free space will be the size of secret files that can be allotted inside the carrier audio file.



After calculating, it will display the available size and you can decide which files can go inside. As seen in the screenshot, 3.8MB is available as free space. The size of the original mp3 file is 5.4MB and DeepSound won't interfere with the original components of the audio file. It actually appends the secret files to the original audio file thus increasing the output size of the final encoded file by an amount equal to the available free space (depends on the audio format and quality). On the



## Win 10 drains and heats

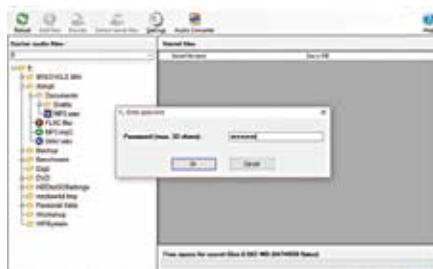
Users have complained about battery drains and heating issues on devices running the new OS.  
<http://dgit.in/Win10heats>



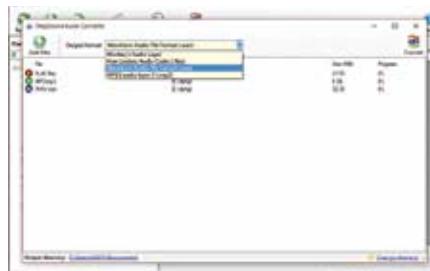
## Secure your Data.

Losing important data and passwords sucks. Here's how to protect and secure data.  
<http://dgit.in/ProLap>

Workshop



secret files section you can either drag-and-drop the files you want to hide or add them using the Add files button or by simply pressing F2. As you start adding secret files, you will notice the size of free space change, showing whether you still have space to add more secret files. When you're sure about the secret files, click on Encode at the top or press F3 and select the output directory where you want to save your file. Then, select the output format for the audio file which includes ape, wav and flac. You also have the option to encrypt your files with a password. Click Ok and DeepSound will encode the secret files onto the carrier audio file and place it over in the output directory.



DeepSound lets you control the audio quality of the output file which can be changed in the Settings menu. Selecting low quality will increase the background noise in the audio but offers more space to hide secret data. High quality encoded files don't contain background noise but again, you won't get much space available to hide the secret files. To put the quality and available free space into perspective, if your carrier audio file is 100MB, you will get around half (1/2) the size, which is 50MB in the low quality setting. In normal quality, you'll get 1/4th which is 25MB and in the high quality setting, you'll get 1/8th that gives you 12.5MB.

If it wasn't made clear already, the output file can be used as an audio file,

too. And without any audible loss in audio quality (as compared to the original track) either. Maintaining your farce of it being a regular everyday music file.

### Extracting secret files

Extracting your secret files from the encoded files is fairly easy and can be accomplished with the same software. Navigate to the encoded file that contains the secret files from the Carrier audio files section. As you select the encoded file, DeepSound will detect whether that file has been encoded with secret files. If you had enabled a password while encoding, you will be asked to enter the same when you click on the file. After

entering the password, you can view all the secret files that have been added to the audio file. Select the secret files you want to extract and click on the Extract secret files button on the top or press F4. The selected secret files will be extracted to your output directory.

DeepSound also packages an audio converter but is limited to output formats of ape, flac, mp3 and wav. The audio converter accepts input formats of ape, flac, mp3, wav and wma. You can convert any audio file under the above mentioned audio formats. If you have low storage available, you wouldn't prefer wav or flac audio files and if you're carrying these audio files on a mobile device, you will prefer mp3 files. The main intention

behind the bundled audio converter is to let you convert your encoded audio files to the mp3 format.

### Going the extra mile

The above method will simply encode the carrier audio files with your secret files and you can extract those secret files whenever necessary. Elliot took an extra mile ahead by creating an audio CD containing his secret files and labeling them with band names to completely disassociate any kind of suspicion. Again, this is quite easy and can be done with any regular CD/DVD burning tool like Burnaware or the more classically remembered Nero. All you need to do is select 'create audio CD', burn all your encoded audio files onto it and store it away. When you need to access the files, rip the cd and decode as explained.

### More ways to hide files

Although it's been months since DeepSound received updates, it still achieves all the necessary audio steganography features. This software does not support image steganography and doesn't encode files into video files. You will come across numerous image steganography tools on the Internet but it's better to have a tool that does it all. OpenPuff is an open source steganography tool that can be downloaded from here <http://dgit.in/OpenPuff>. It supports image, audio, video and flash file steganography and has many layers of security for encoding, using about 16 multi-cryptographic algorithms. This effectively makes OpenPuff a professional steganography tool. This tool can be used to embed messages into images and encode secret files into audio and video files also, giving you a wide array of file format options to hide your files.

And that's about it. Well, not exactly. There are several other sources out there for hiding files within media formats. Good software aren't that easy to come across, but with DeepSound and OpenPuff, you're well on your way to being a good steganographer. We know you all are already rampantly exchanging music, pictures and videos amongst your friends. Now, you can hide your own secret files within them.

# CYBERSQUATTING **RELOADED...**

Or 'how to perform highway robbery on the internet (once again)'.

Elroy Desmond  
*readersletters@digit.in*

The World Wide Web is slowly turning into an extremely congested space. A place that used to offer endless opportunities and possibilities is now littered with shady domain names and half-baked websites designed only to make money from click-based advertisements. Fortunately, the dynamic nature of the Internet means there's always room for competition. Although, if you have an idea that you want to christen and execute, you'd better hope that the brand name you settle on has a matching domain name available. Your ground-breaking idea for dog-scarves.com may sound like the next big thing until you hear the crazy \$2,000

## Spoiled for choice

asking fee (at the time of writing) from the domain registrar that owns it.

To help businesses, avoid the chokehold nature of such practices, the Internet Corporation for Assigned Names and

Numbers (ICANN) recently green-lit a host of new generic top-level domains (gTLDs) for sale to the general public. TLDs such as .online, .sales, and even .xxx can now be snapped up for cutthroat prices. No longer are you restricted to common extensions such as .com, .org, .net, etc. However, the new gTLDs have also opened up a slew of opportunities for potential cybersquatters.

## Cybersquatters – the Internet banditos

Cybersquatting is defined as “the registering, selling or using a domain name with the intent of profiting from the goodwill of someone else’s trademark.” The World Intellectual Property Organization (WIPO) recognizes cases of cybersquatting as those where a domain name is intentionally registered to be “identical or confusingly similar to the trademarked name and service mark” of the organization in question and the Respondent “has no rights or legitimate interests in the name” – a practice termed as “bad faith registration.”



## Beware the cybersquatter



## The Pony Is Back Again

2016 Ford Shelby Mustang is here.

Watch the beauty here:

<http://dgit.in/Shelby2016>



## Human vs GPS

Is GPS just making it easy for us to find the locations or are we actually getting dumber?

<http://dgit.in/HelpGPS>

Feature

IMAGE CREDIT: COOLCAESAR AT WIKIPEDIA



ICANN setting the standards for a typical non-profit organization's headquarters

In simpler words, if you buy a domain name that very closely resembles that of an existing business with the intention of selling it to that same business at an inflated price – then congratulations! You are a cybersquatter!

This practice was extremely rampant around the time of the dot-com boom when companies just realized the untapped potential of online sales and marketing. It was not uncommon for established brands to find a domain

name with their trademarked brand already registered. The first ever registered case of was that Michael Bosman vs. the World Wrestling Federation. In October 1999, Bosman registered [worldwrestlingfederation.com](http://worldwrestlingfederation.com) with a domain registrar in Australia and three days later, tried to sell it to the US-based World Wrestling Federation (now the WWE) for \$1,000.

### Who's responsible for these new TLDs?

The introduction and initial allocation of TLDs is controlled by the aforementioned ICANN, a non-profit organization based out of Los Angeles, California. Their other responsibilities entail the standardization and development of policies for internet-based identifiers and numbering facilities that manage the IPv4/IPv6 address spaces and DNS servers.

ICANN actions the rights to new TLDs to companies known as domain as domain registrars. An auction is considered the most viable medium for the sale

of TLDs since different companies will place different evaluations on a particular TLD. For instance, Google paid around \$25m for the .app domain. This allows them to create addresses such as Google.app or Android.app, as well as charge others that wish to register their own .app domain names. Other domain name registrars include big names such as Godaddy.com, Name.com, and Hover.com. Popular Indian-based registrars include Bigrock.com and HostingRaja.com. Google also owns their own registrar known as Google Domains (currently only available in select countries).

### Cybersquatting vs. domain investing

While they may look to be similar at first glance, the practice of domain parking or domain investing is markedly different from cybersquatting, primarily from a legal perspective. Domain investing is the process of registering (and subsequently renewing) a domain name with the motive of selling it to a prospective buyer for a profit. This may sound very similar to the definition of cybersquatting, albeit there is one very important

## TYPOSQUATTING

Another popular form of domain name squatting is Typosquatting, whereby you park domain names that are typographically similar to popular websites. Take for example the story of [gamil.com](http://gamil.com). A relatively unknown product and graphic design company located in North Carolina, Gamil's website received an unexpected spike in traffic after the rise of Gmail. Unlike traditional typosquatters, Gamil did not choose to monetize their website by placing Ads to Google's competitors or attempting to resell the domain to Google. Instead, they greeted all visitors with a banner that "You may have arrived here by misspelling Gmail. We understand. Typing fast is not our strongest skill. But since you've typed your way here, let's share."

However, if the domain redirects to a functioning website riddled with adverts for products/services that closely resemble your trademark, you have a very clear case of "bad faith domain registration"—the most common form of cybersquatting. For example, if your company provides computer repair services and the website with your domain name is filled with ads

for computer-related services, there's a high likelihood that the website is being operated by cybersquatters who are selling the space to competitors.



Innocent victim of typosquatting

Furthermore, another common and astoundingly trivial reason organizations, both big and small, end up as victims of cybersquatting is the simple oversight of missing the deadline to renew their domain's registration. In fact, most experienced cybersquatters are keen to keep an eye out for registrations of high traffic domain registrations that are soon to expire and snap them up if the owner forgets to renew it.

Before you jump to any conclusions, a final step for clarification should be to contact the domain name registrant and

inquire about their exact intentions regarding the squatting domain. You can use the "WHOIS Lookup" tool at [whois.net](http://whois.net) to find the domain owner and check if the domain is being used appropriately. This helps confirm if you are either a victim of cybersquatting or just unfortunate to not snap up the domain name earlier.



## Fear, Start-Up

Security fears for your latest startup?  
These guys might be able to help.  
<http://dgit.in/FearIT>



## TechFood

Technology may help to bring food on the table by 2050. Read on to know more:  
<http://dgit.in/Foodin2050>

difference: the domain name (in a legal sense) at the time of registration must not infringe on existing trademarks or copyrights. So you can go ahead and buy beerboats.com in the hope that an entrepreneur with a vision of charting boat trips for beer aficionados will want to buy it off you for the right price.

Of course, domain investing is much more than just buying a couple of domain names and hoping to hit the lottery. Many long-time practitioners of domain parking have developed “parking plans” that they use to ensure minimal investment and maximum gain. They buy tens to hundreds (and at times even thousands) of domain names while calculating potential sales and dynamically adjusting costs of popular names to make up for retrospectively low-return domain purchases. While it may seem sketchy, this practice is perfectly legal and if done intelligently, can deliver excellent return on investment.

### Identifying squatted domains

Back in the day, naming the business was way down on the priority list of an entrepreneur’s concerns. However, the Internet did well to change that by dropping the massive headache of domain parking. Now, even before you make your idea public, it is highly recommended that you first buy up any and all domain names even remotely related/similar to the name of your proposed business. For example, if you plan on

purchasing bombaybookclub.com, you’d do well to also scoop up similar domain names with other gTLDs such as bombaybookclub.net and (thanks to the new gTLDs) bombaybook.club. This way you can divert traffic from people who search for similar terms, given you have proper search engine optimization in place.

However, if your preferred domain name is unavailable, there are two possibilities:

1. It is already in use by a full-fledged website/web service, in which case you have little chance of obtaining it.
2. It is owned by a cybersquatter who is either using it to generate revenue piggybacked on the goodwill of your brand name or has parked it with the intention of selling to any interested party for a profitable sum.

To recognize a case of cybersquatting, check if the domain name redirects to a functioning website. If you find yourself redirected to a landing page with a “this domain is for sale” then chances are you are dealing with a cybersquatter.

However, there is also the possibility of a legitimate excuse for the domain name not redirecting to a functioning website. For example, if the landing page has an “under construction” sign or if you encounter a “404 Not Found” error, the domain owner may be in the process of constructing their website. In this case, chances of purchasing the domain are slim since the original owner will be hesi-

tant to relinquish control of it, especially if they have an established client base.

### How to resolve your cybersquatting problem

Like all internet-related legislation, the laws regarding cybersquatting are constantly evolving. In the United States, a complainant can sue a cybersquatter under the Anticybersquatting Consumer Protection Act (ACPA). The act requires the trademarked name to be distinct (i.e. registered) at the time that the disputed domain name was registered by the cybersquatter. For example, if you registered the domain kfcrecipes.com with the intention of trying to profit from KFC’s trademarked brand name, then you would be guilty of cybersquatting under the ACPA. Alternatively, if your website has no relation or affiliation to the trademark and is not profiting from the inflow of potential traffic, then you have an arguable case.

Up to now, almost all cases filed under the ACPA have sided with the suing party, and many have resulted in sizeable damages. Individuals found guilty of cybersquatting under the ACPA may be required to pay up to \$100,000 for each domain name that violates the legislation. On the flip side, a lawsuit can be a drawn-out affair and the estimated business lost from not owning that domain may end up surpassing the payout you receive from the lawsuit.

Unlike the United States, India is not blessed with well-established legal frameworks to ensure trademark and copyright infringement cases are a smooth affair. If you choose to take a cybersquatter to court, you may be mired in legal paperwork for quite a while (unless of course you a large corporation with an intimidating legal team).

Fortunately, ICANN has recently set up a grievance redressal system called the Uniform Domain Name Dispute Resolution Policy (UDRP), which has been specially designed to arbitrate cybersquatting disputes. To ensure that it is a case of cybersquatting under the provisions of the UDRP, the complainant (you) will have to prove that the respondent (the cybersquatter) is in the wrong. Specifically, you need to prove that the cybersquatter is:

### .SUCKS

From the list of new gTLDs that were released by ICANN, there was one that created quite the controversy. Vox Populi Registry, a company owned by the Momentus Corporation, won ICANN’s auction for the right to sell URLs with the “.sucks” domain. Vox Populi Registry’s website (<https://www.registry.sucks/>) claims they are promoting consumer advocacy by allowing Internet users to create websites that can act as forums for disgruntled consumers to voice their grievances against companies with less-than-adequate customer support. Many argue that this is nothing less than Internet-highway robbery since most large corporations will just pay the sunrise registration amount, writing it off as PR damage control. Keep in mind that if you’re harboring plans to buy a evilcorp.sucks domain name, keep in mind that this will not come cheap. Be ready to shell out about \$250 a year for those domains that survive the initial “Sunrise Period”, during which registered trademark holders can buy related domains for a premium price of about \$2,500. Eventually, it is possible that many will just choose to ignore the “.sucks” domain, especially since there is no shortage of YourCompanySucks.com domains, and we haven’t even considered the different permutations and combination leading to domains such as YourCompanyReally.sucks and so on.



## Google Cat-view

Want to see the world a bit differently?  
How about a Cat's view? Check out.  
<http://dgit.in/Catview>



## Cell-network congestion

Network too congested? Find out how the telecom companies are planning to deal with it.  
<http://dgit.in/CellTower>

Feature

### SOME OTHER CHOICE PICKS FROM THE CRAZY NEW TLDS

.NINJA – Websites that load so fast, they're invisible to the naked eye.  
.NETWORK - .NET's more sophisticated older brother.  
.HIV – Can see this one becoming a huge cause of cyberbullying.  
.WTF – Will most probably end up as a blanket TLD for all the crazy, weird stuff the Internet has to offer. If there wasn't enough of it out there.  
.WANG – Can't see anything going wrong with this one. Oh, wait.  
.SEX, .XXX, .PORN – Considering this sort of content takes up about 1/3rd of the total Internet, it's about time it got its own TLDs.  
.BOO – Overly attached girlfriends and boyfriends around the world will be scurrying to get one of these with their lover's names attached. Or modern ghosts looking for a haunt.

Here's a shout out to some Indian-themed TLDs		
.DABUR	.BHARTI	.AIRTEL
.GURU	.DEV	.DESI
.SHIKSHA	.TATAMOTORS	.SHRIRAM

### Famous Companies/Brands

.LEXUS	.HSBC	.GOOGLE	.BENTLEY	.BBC
.TOSHIBA	.SAMSUNG	.PHILIPS	.NOKIA	.NISSAN
.YOUTUBE	.WINDOWS	.MICROSOFT	.XEROX	.TOYOTA

- using a domain that is identical or confusingly similar to a trademark or service mark to which the Complainant has registered rights,
- has no rights or legitimate interests in the domain name, and
- has registered and is using the domain name in bad faith.

If you can provide evidence to the above, you have a pretty clear-cut case of bad-faith registration for which the UDRP will either cancel the domain's regis-

tion or transfer it to you. You should note that the UDRP arbitration process is expensive and can take up to 60 days to complete, during which the domain's registration cannot be transferred (which means it is still in the custody of the cybersquatter). Furthermore, the fees vary between \$1,500 and \$5,000 depending on the number of domain names and the number of panelists required to decide the case. Top top it off, the complainant is expected to pay the total fees whereas the

respondent only has to share in the fees if they choose to have three panelists when the complainant choose one.

If these procedures seem too tedious for your liking, you can ultimately choose to pay the cybersquatter the demanded amount. More often than not, you may just be talking to a inexperienced cybersquatter who took a gamble on a domain that they believed would fetch them a nice resale value. If you're lucky, you may be able to haggle a better deal thus avoiding having to pay the UDRP or legal fees.

### Squatting on Facebook

One case of Cybersquatting involving a famous organization was that of [facebook.co.il](http://facebook.co.il). Facebook registered a complaint with the Israel Domain Name Dispute Resolution Policy (IL-DRP) stating that the unauthorized use of its copyrighted name was damaging its business. Facebook showed how they owned over 100 domain names consisting of the term 'facebook,' in multiple countries and languages.

The current owner of [facebook.co.il](http://facebook.co.il) had "no rights in the name" and was obviously using the name "in bad faith." Furthermore, the owner was a private citizen and lawyer by profession with no association whatsoever with Facebook.

To add to that, the disputed website consisted of references to "four, non-related charitable organizations, none of which had any association with the term 'Facebook'." This was an obvious indication that the site owner was cybersquatting and trying to earn ad revenue on the basis of Facebook's brand name. As one would expect, unsurprisingly, Facebook won the lawsuit, and the IL-DRP awarded them control of the domain.

Cybersquatting can be hugely damaging to people under the guillotine and an amusement to the people unaffected. It is a rising problem in today's day and age, with the internet in the state of power that it is, today.

One would recommend knowing what you're facing, after all, knowledge is power and knowledge of cybersquatters and their MO is useful in bringing them down.

For references to this article, please visit  
<http://dgit.in/CyberSquatRel>



Fighting a cybersquatter will cost you some considerable dough



## Adorable Drones

Want some cute, adorable drones?  
Here are some suggestions.  
<http://dgit.in/Re-drones>



## LA Philharmonic: In VR

You can soon watch the orchestra perform using VR headsets. Read here:  
<http://dgit.in/symphonyVR>

# Loggoing on

How Lo can you Go? (Here in the typography the 'Lo' and the 'Go' should be distinctly different from the rest. Basically, you should see Lo Go immediately when you look at it)

Cyril Vatelli  
*readers.letters@digit.in*

**A**fter Google changed its logo – boy, were there waves! Not destructive, landscape altering waves, but waves that push you just enough to make you lose balance.

Google changed its newspaper-reminiscent typeface in September with that of a child who was let loose with a crayon and a penchant to watch the world burn. The quaint looking lowercase 'g' present on all our tabs turned into a multi-coloured, grotesque uppercase 'G'. Gmail would never be the same again.

Or so we thought, and always do when a logo of a brand we know and love changes. There is confusion at first, then anger, and then, after a healthy amount of ranting on the internet, we make peace



The new, and mostly hated, Google logo.

with it, as usual. The old logo already begins to look outdated, and we decide to get on with our lives.

### And so the question arises

Do these logo changes really mean anything? Under all that marketing jargon is there something of value being carried out here or are we at the mercy of bored designers and fidgety brand managers?

Take, for example, Quora, the forum of intelligent or at-the-least earnest procrastinators where questions can be asked and interesting answers expected. When

Quora changed its logo, it looked like it hardly changed anything. The tip of the 'Q' seemed longer and the 'r' had become rounder. That's it. You might wonder why anyone was paid to do this – and you would stumble across a lengthy explanation for it.

The logo was changed because the 'r' and the 'a' met at a weird angle, the logo looked cluttered when its size was reduced, and because there was a lot of 'noise' in the logo, among other things. Noise here is the unevenness of the top of the letters of the old logo which doesn't allow your eyes to travel smoothly over it.

But there was an angle of manipulation too in all this! The new font used here was Baskerville, a font which, filmmaker Errol Morris concluded with a convenient social experiment, that "promotes, engenders a belief that a sentence is true," which means that you now are in possession of a very useful life hack.

These do sound like good enough reasons which could seep into our minds slowly over time and thus be significant.

But then what about the new Lenovo logo? This new logo looks very similar to its previous one at first glance, with the prominent change being that the font is no more in italics. The company says that it now looks more personal. Yes of course, of course it looks more personal. But the important part here is that the logo is now enclosed in a rectangle, which can be filled with any image by its partners. That is a more tangible outcome of reworking a logo.

And then we come to Facebook's new logo. Hold the two logos aside and try to spot the difference. We'll wait. Facebook here turned the two-story 'a' to a one-story

'a', and made the letters a bit thinner. They did it to make the logo "approachable and friendly". So now you know who to turn to when you've had a bad day.



Shield your eyes from this drastic change!

### Isn't this marketing speak?

Before you dismiss all these hoopla and begin to believe that these logo changes are merely the experiment of a restless imagination, you may witness the buzzword for any new logo nowadays – it's mobile-friendly.

Logos of technology companies are going the simple, flat, and thus more mobile-friendly route. Flipkart changed its logo from the shopping cart racing past to its iconic 'f' on a shopping bag to make it more mobile-friendly. Google changed its logo to also make it more flat, and clean, and thus more mobile-friendly as the previous logos were designed keeping desktops in mind. The Lenovo logo too was changed to make it more (déjà vu), mobile-friendly.

And this trend, some believe, is taking the fun out of the logo world. Shadowing has been stripped off, nice round buttons which actually look like they can be pressed have been stripped off, and we are witnessing the shift from skeuomorphism to the commonly seen flat design which began since around 2012.



## Cool Solar Cells

Feeling a little hot inside your home after installing solar cells? Here's how to cool them.  
<http://dgit.in/Coatcell>



## Message @Firefox!

Looking for reasons to shift to Firefox, here's one more to add to your list.  
<http://dgit.in/ChatFox>

Feature



**Skeuomorphism. More pretty than important.**

Skeuomorphism, for the unfortunate reader who did not undertake a career in design, is the style of making digital items and prompts look like their real life counterparts. For example, when a folder icon on the computer looks like a real, physical folder - that's skeuomorphism. When a modern day car has wood panelling applied on its sides to make it look like a vintage car, that's skeuomorphism. When the camera of a phone makes a click sound on taking a picture, a sound it logically does not need to produce now, that's also an example of skeuomorphism.

We don't want pretty anymore. We want something that works. And that is why that designer and that engineer don't look eye-to-eye anymore. A thought that is slowly gaining traction in the design world is that this phase of design is not a phase which will be remembered for its innovation, but of the phase where everyone went "Let's make it simpler" instead of "Let's make it cooler."

But isn't that a good thing? Why on earth would we care about how that facebook logo looks as long as the service still remains the same. Isn't it better when an application opens even 1/4th of a second faster because of a simpler interface? Or look at it the other way round. Nobody wants to wait a second more to open the same service packed in a prettier package.

That doesn't mean that all these tech companies are doing is making their logo mobile-sociable. Take, for example, the heart-attack inducing Oculus Rift's creator Oculus VR. Oculus had a very interesting eye next to it's name in the logo, which signified virtual reality. Unfortunately for it, it also looked like the

ever watchful eye of Big Brother. So they took out the O of Oculus, flattened it, and presented it saying "Here. This is the new logo." The interesting part is, the logo now also looks like a headband, reminiscent of the company's product which made the most noise, the Oculus Rift.

And in one of the saddest but more ingenious logo changes is Quirky, an organisation which serves as a platform for inventors and companies to connect. The company changed its earlier almost scribble like logo to a remix of the symbol '&.' Now when the company has to display on its website a collaboration between an inventor and a company, it says "Inventor & Company." That's pretty cool.

### Why do brands change logos?

There are more reasons for a brand to change a logo. A brand wants its comical look to be turned into something more serious. A serious look wants to be more friendly. A friendly look wants to be serious too. A friendly look wants to be the brand-next-door type of brand. The list is endless.

A brand will change its logo to give a better idea of what it's products now deliver, or what the brand wants you to think its product now delivers, like how Flipkart changed its logo to reflect a brand which sells a variety of items and not only books. It will change its logo because what was cool yesterday looks lame today, like how Yahoo changed its yodeling font to something a bit cleaner. It will change its logo to reflect possibly a new ownership, like how the font of Motorola's logo looked more 'Googley' when it was acquired by Google, before Lenovo bought it of course. An even more appropriate example of this would be Zomato. Zomato changed its fork and heart logo to a spemesque spoon logo after acquiring the US company Urbanspoon. Why did Zomato change the logo to look like what it acquired? So that the 40 million users of the Urbanspoon would not wake up one day and see some strange app on their phone which they would promptly uninstall - at least it looked similar.

Brands will also change their logo to try to shake off the fact that everybody thinks of them as a dinosaur on an intra-

venous - this is clearly not a reference to AOL's logo change way back in 2009.

Sometimes, however, we stumble across companies which have kept the logo as similar to their original one as they could.

Hewlett Packard has had that familiar 'HP' in its logo for decades. Even after it has decided to split up into two companies, the one handling the computer business still has that iconic 'HP'. IBM too has not made any major changes to its logo since 1947, sticking to its three letters, and since 1971 has stuck to its window-blind look, a look which means speed and dynamism. That is what we were told anyway. Even Intel has



Zomato's current logo

just played around with the placement of its logo since inception, taking the 'inside' outside and sprucing it up a bit. Despite the changes, the feel of the logo and the familiar unfinished circle remained.

### So what does it all mean?

Well, an irreverent conclusion is that logos are like clothes. They give an idea about what the company, (or in this metaphor the body if you were paying attention) wants to look like. So does a different outfit really make that much of a difference? Because underneath the shift from pastels to bold or checks to stripes, what matters is whether the garment still fits right and does its innate job of covering the parts you'd like covered. But wait, hold that thought - does only size matter? Don't we always pick that black shirt because it does wonders in covering up that beer belly? Doesn't a Palazzo cut ingeniously cover that skinny frame?

To answer that question, have a look at our previous issues. Did you notice the number of times we changed the logo on our cover page?

**Buffer Flaw.**

Want to know how security flaws work? Here is some insight into that.  
<http://dgit.in/FlawWork>

**No Hello from Aliens?**

Why haven't we received hello from aliens? Find out more with the host of Cosmos.  
<http://dgit.in/HiAlien>



# WHAT WILL YOUR PHONE COST IF MADE IN INDIA?

The price cut may be lesser than what you hoped for, but the Make In India story is much more than what you're paying.

Prasid Banerjee  
[prasid.banerjee@digit.in](mailto:prasid.banerjee@digit.in)

**W**ell, as it stands, not much, and there's a catch – way too many, actually. To start off, it's a really long term process. When we say long term, we mean really long term. Secondly, the price reduction may not exactly be as big as what you're looking for. "In theory, phone manufacturers can reduce the price by as much as 12.5% by passing down the import duty tax savings. Of course, not all of that would

be passed down to the consumer. Also, making, rather assembling phones in India, will have some overhead, initially. So, the consumer could see less than 5% reduction in pricing," says Mahesh Lingareddy, CEO and Co-Founder, Soft Machines, a company that develops semi-conductor IPs and other solutions.

Lingareddy's comment actually tells you that there's more than what meets the eye. Firstly, the myriad headlines you see today about phones being made or manufactured in India are exaggerations. All of those phones are simply assembled in India, which means, going by the above

statement, their prices can be reduced by less than 5%. That too depends on whether a company is willing to pass down what it saves to the consumer.

The 12.5% reduction in price sounds more promising, but again, only if it is passed down to the consumer. Consider, though, that a company would want to use the cost savings for research and development and other purposes, which means you're looking at something between 7-10% reduction in price. Now that's not much is it? What's more important is that even for this to happen, a phone actually needs to be 'made' in India. And that's



## Mosquitoes everywhere!

The pesky mosquitoes have made their way to the Arctic thanks to their love for CO<sub>2</sub>.  
<http://dgit.in/ArcticClimate>

## More for less!

Want to have something more gimmicky than what you paid for? Here are some suggestions.  
<http://dgit.in/Gimmicky>

Feature

where the problem goes to a whole different level.

When asked whether India actually has the infrastructure for this to happen, Lingareddy clearly says, "No, India doesn't have the infrastructure to manufacture a phone completely. It is going to take a while. Skill set, investment capital and infrastructure needs to be built up especially with respect to PCB manufacturing and SMT. All the recent PR around making phones here must be taken with grain of salt, as we are merely doing limited assembly and testing and still call it 'made in India'. We still have ways to go."

The integrated semi-conductor industry will probably never come to India yet. Companies like TSMC will presumably never make chips in India, even if fabless semi-conductor manufacturers are excited by the prospects here. India currently doesn't have the skill for these companies to come here and work. "The experience with fab technology is very low indigenously in India. So this is going to have to take some level of skill development and training, possibly through importing some talent or otherwise. No foreign company has opened a fab in India right now. So, the actual skill level is quite low," says Rajiv Kapur, Managing Director, Broadcom India.

Further, even if the facilities are developed, it doesn't mean that the cost of chips will automatically go down. For one, setting up a foundry is a complicated and expensive process, and India has to start from square one. Even then, there are more factors involved. "At the end of the day, the cost of the wafers is a part of the cost of the chip. It's in some sense like gold jewellery, the more gold you put in, the more the gold is going to cost. Just because a fab is opening India is not a statement that it will be cheaper. There are two unknowns today, which technology node is opened in India, and how will it be priced compared to the rest of the global chain. That is the key answer you need," says Kapur.

What Kapur means here is that even if we do have the production capacity here, it depends on whether we can actually compete with global leaders. You hear about Samsung and Intel producing 14nm

chips for smartphones. Now imagine – a new company set up in India, will have to produce at that level in order to compete. Even if we manage that, we will need to match the scale that current global players can produce. A tough task, to say the least.

It's not that the Indian government isn't putting in the right efforts for make in India to succeed, it's just that it's a herculean task. "India has a growing appetite for electronic goods, which means there is obviously a strong demand in the market for such devices, including smartphones. Incidentally, 65% of the current demand for electronics products is met by imports. So, there is definitely space here to build a local manufacturing hub. Add to this India's design expertise, favourable government policies and incentives offered



for foreign investment, and the intent is correct, as proven lately by Foxconn's \$5bn pledge of investment in the country," said Dr. Finbarr Moynihan, GM, Corporate Sales, International, MediaTek.

As Micromax's CEO Vineet Taneja says, despite the government's best efforts, equating make in India to pricing is incorrect, since other factors are also involved, including the recent market fluctuations. The government has currently given duty advantages of 11.5% to mobiles made in India, while tablets are getting a 10.5% advantage, but it may still not be enough.

You need to look only as far as the Xiaomi Redmi 2 Prime, which is supposedly the first 'made in India' phone. The company was able to launch it at ₹6,999, which though competitive, isn't really the price cut that you may have hoped for. Of course, the price cut is lower on phones that are already pretty inexpensive, but the price cut doesn't seem to be much on the high end phones, either. As is evident from Samsung's repeated

claims that its phones are being made in India and yet continues launching them at over 50k.

None of the above means making phones in India is not required, though. The real reason for the whole Make In India initiative isn't to bring down the prices. Did you know India's electronics imports are expected to be around \$300 billion by 2020, to meet a demand of \$400 billion? The real reason for making in India is to reduce the import-export balance of the country. At the current rate, electronics imports are estimated to overtake oil, and we don't need to explain to you what that would mean, do we?

There have been reports stating that Indian Prime Minister Modi wants the import-export balance to be reduced to

zero. While this may be a seemingly massive task, the government can at least try and reduce the gap as much as possible. And it is doing so, through incentives and policies that can help manufacturers, some of which are mentioned above by Micromax's

Vineet Taneja. In fact, the company's sister concern, the Yu brand, is also of the same opinion. According to Amarinder Dhaliwal, COO, Yu Televentures, even phones assembled here can potentially get a price cut. "When companies import a finished product, rather than merely a component, they attract a duty of around 12.5 per cent, while smartphone components can be imported at just 1 per cent," he said.

While consumer tech today can often feel like it's all about the next best phone, in the larger scheme of things, it plays a much bigger role. Our appetite for bigger, better and more phones is fueling all of this. There's a need for things to be made here, and while the government continues to put its efforts into it, as many more accomplished than us have said before, it just seems unlikely that it will happen. In addition, a price cut is not the only thing you should be looking for either, since Make In India is less about the price that you pay and more about the price that the country pays. 

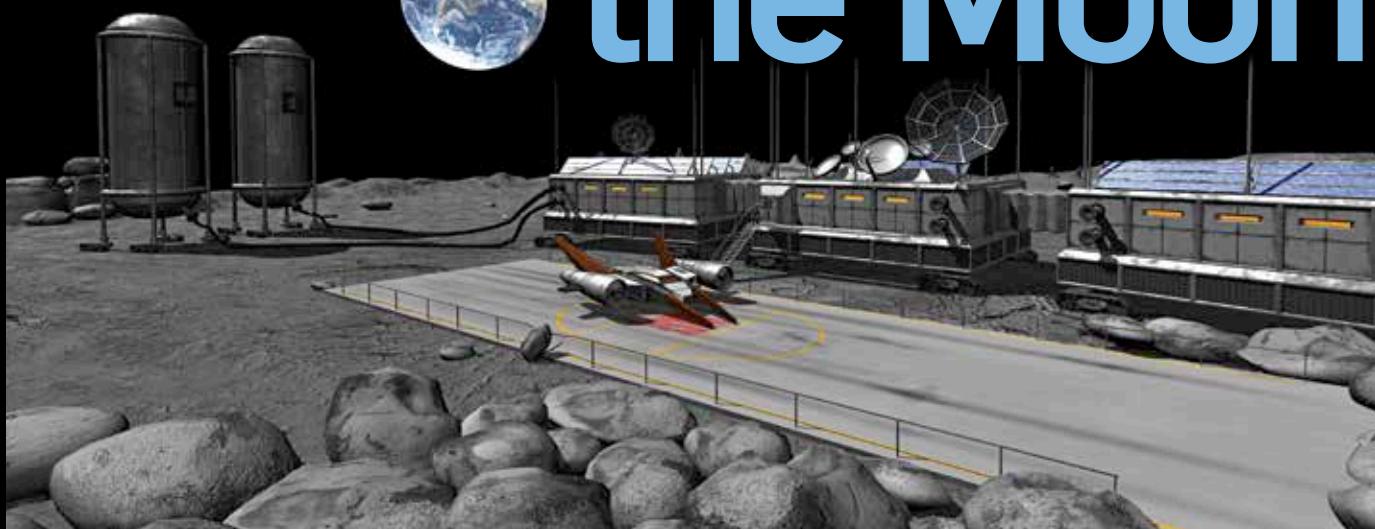
**Insight**

Human athletes are a cut above the rest, so much that you could call them machines.

**F1 Health Check**

How the health of the car and drivers is monitored in the world of F1.  
<http://digit.in/F1health>

# The Dark Side of the Moon



**The global superpowers are vying for vast deposits of unclaimed energy resources on the moon. The winner will solve the energy problem for the entire world.**

Shaan Repswal  
 readersletters@digit.in

The year 2014 was pretty great for the global space economy, and this has been going for the last two decades. Comprising of ground services, satellite manufacturing, communications, TV, and remote sensing among other things, the global space economy grew by nine percent in 2014. In case you're wondering, that kind of a growth rate is pretty high for any industry. It's a matter of revolutionary proportions if this growth rate can be sustained for a few decades. That's exactly what's been going for the past few decades, and there is no reason for the trend to change.

This economy was valued at a total of \$330 billion worldwide in 2014. That's around three times the size of the global gaming industry. As nations other than the US and Russia invest in their space programmes, the non-US government

space spending has outpaced that of the US government. Total commercial space activities make up to 76 percent of the aforementioned statistic. That means the industry is sustainable and economically sound. The global space industry is extending its reach beyond the sub-orbital business. It is no longer exclusively about bringing 4G internet, Google Maps, Skype and HD Porn to common folk any more. United States, Europe, China, Russia, India and Japan have already declared their wish to mine the moon for precious minerals and set up permanent bases there.

Japan's space Agency called Japan Aerospace Exploration Agency, aka JAXA, has already launched its Hayabusa-2 probe to mine asteroids. If that sounds far fetched, just wait till you hear about what Russia has been up to. Sometime between 2005 and 2006, Nikolai Sevastyanov, the owner of Energia Space Corporation, unveiled plans to build a permanent base on the moon by 2020 to start mining the planet for Helium

3. Then there's the Chinese, who plan on accomplishing this same feat in the next 50 years with the Chang'e program.

**Unclaimed Bounty**

What's on the moon anyway? Rare Earth Materials, which include fifteen lanthanides from the periodic table plus scandium and yttrium. These elements are mostly used in modern electronics in trace quantities, but considering that there are billions of electronic devices out there these elements are being used up copiously. Rare Earth Materials are, well, rare and the moon's got plenty of that just waiting to be mined.

The most important resource is however the Helium-3 isotope. Known as Tritium, it's primary application would be as fuel for fusion reactors of the future. In fact, scientists at ISRO plan on building a He-3 fusion powered engine for a future space faring vehicle. Tritium is hardly available on the Earth, because the Earth's magnetic field shields us from the highly charged solar winds that carry Tritium. But the upper layers of the moon's regolith has been collecting Tritium over the past billion years. By current estimates there's between one and five million tons of Tritium on the moon. The Earth has just fifteen tons in comparison.



## Hoverboards...Again

Hoverboard Technologies designs new prototype with a gyroscope which balances the rider on a single wheel. <http://dgit.in/hoverbrdwheel>



## 5G Testing by Verizon

The telecom operator is in the phase of testing 5G, but at a cost. Know more here: <http://dgit.in/Verizon5G>

Space Age

Although fusion is still theoretically possible current processes produce post fusion element plus a neutron. Since neutrons are neutral, you can't control where they end up. Let's just say that is an eventuality worse than Fukushima. Adding Tritium during fusion gives post fusion element plus a proton. Because a proton is positive it can be channelled and collected elsewhere using an electromagnetic field.

The energy generated from fusion process is staggering to say the least. The current estimates of the moon's reserves are estimated to meet all of the Earth's energy requirements for 1000 years at least. American scientists surmise that a shuttle full of Extracted and refined He-3 can power the all of USA for a year.

### The Political Angle

In 1967, the Outer Space Treaty was signed, which stated that the exploration and use of outer space shall be carried out for the benefit of all countries and shall be the province of all mankind. Does this mean that the moon belongs to everyone? Or no one? Or are we going to duel it out? Is being debated by Space Lawyers. And Yes, there is such a vocation. There are only three major competitors in today's geopolitical theatre who are capable of participating in this space race. The West, Chinese and Arabic nations.

The West is spearheaded by the US and consists of the European nations. It has the support of the top corporations of the world working together, as well as competing with each other in various industries. Moon Express, SpaceX, Google Lunar XPrize, Lockheed Martin, Boeing among quite a few other companies built on top of the pioneer-

ing achievements accomplished by NASA.

In the West, even startups are attempting to land a small rover to the moon. They clearly do have the infrastructure, but their economy is giving way to other economies with cheaper labour. A paper titled "Sustaining US Leadership in Space" was released in the Space Foundation's Research and Analysis program. It talks about amending the "Outer Space Treaty", justifying regulations, managing

institutional knowledge and increasing the amount of in-house technical work. SSERVI formerly known as the NASA Lunar Science Institute published an article that mentions how a recent report from the Congressional Research Service proves how the US has a supply vulnerability for REMs, many of which have defence applications. The US is serious about supply sustainability and the moon is the only solution, according to that report as well as common sense.

But should the West really be the ones to get their hands on the Moon? Let us not forget that this the civilization that bombs Muslim countries and then equates India with Pakistan for mistreating its "minorities". This is the civilization that pressurises India to not buy oil from Iran because of their political affections to the Saudis. It is these "developed" NATO nations and the US aren't willing to share green tech with India, and yet want us to lower carbon emissions. These are the same people who reprimand us for not taking care of our poor and advise us to disband our space programme and not

vie for the stars in order to feed our poor.

### Crouching Tiger, Hidden Dragon

The Chinese are already making strides with their Chang'e program. The recent Chang'e 5 mission brought back fusion-ready Helium-3. In the past, China had blocked the export of rare earth elements to Japan. China being the exporter of 80-90 percent of the world's electronics is increasingly becoming more



The Chinese have the most to gain from mining the moon

judicious with export of its resources. All the while other nations worry over where they will procure these limited resources in the future. It is primarily because of China's investments in Africa that they have acquired mineral rights to the most potent of regions in the world. However, even then according to the estimates of Chinese experts, their reserves will not last more than two decades. The moon is the only way out of this and China knows it.

However the problem with the Chinese is that they sport the same supercilious spirit as the West. After the financial meltdown in the West, the Chinese administration decided that this was their time to rise and have been pursuing supremacy over Asia and the rest of the world by hook or by crook. They have annexed a region of Leh/Ladakh and continue to pressurize India to let go of her sovereign territories including but not limited to Arunachal Pradesh. China has had a long-standing plan to divert the waters of the Indian rivers to boost their own agricultural produce. This could cause the worst famine in human history in the Indian Subcontinent. They have also annexed regions from Japan, Vietnam, Myanmar and continue to claim ownership over what is now known as the South China sea.

The power struggle and wars for resources can get really ugly. There can be no doubt that these countries are aiming for the moon... and literally at that. And they have the means to get there and also tap into the resources. The future does not look very pretty for most people of the world. But this only includes what the major powers plan and are capable of. And not what the other nations are capable of. And not what the other



The moon has enough rare minerals to meet mankind's energy needs for the next 1000 years



## ISS & The Sun

NASA releases spectacular images of the space station passing the Sun.

<http://dgit.in/issnasapic>

## Faster, sharper video streaming

Look inside Google's master plan for faster, sharper streaming video and find out how.

<http://dgit.in/FastVids>

# HUMAN MACHINES

Are they man, or machine? Power, extreme!

Nachiket Mhatre

*readersletters@digit.in*

**S**omeone recently asked us if running is the best way to get fit. We responded with a counter question: what exactly do you mean by fit? If losing fat and slimming down is your only concern, then running and other forms of high intensity cardio is indeed the fastest way of reaching that goal. This response is invariably followed by, "But I want to gain strength and add muscle too". That's when we explain how this fitness business works with our

Farah and Asafa Powell. Farah looks incredibly skinny, whereas Powell is all jacked up like a bodybuilder. Any exercise, when performed repeatedly, results in the body adapting itself to perform the oft-repeated task. In fact, researchers at Karolinska Institutet in Stockholm confirm that the body undergoes changes at the DNA level when subjected to exercise.

That explains Powell's buffness, because explosive sprinting required by 100m running events have conditioned his fast-twitch muscles to deliver explosive strength, which in turn is associated with muscle hypertrophy or increase in

you fancy. An exercise plan focusing on running is a terrible idea if you want to add muscle mass, whereas only lifting heavy weights won't help you slim down in an efficient manner either. However, in establishing this fact, it's pretty evident how rarefied the diversity in skill, morphology, and general athletic efficiency is, at least when it comes to the top tier of sportsmen. The question worth asking here is 'has modern sports pushed the envelope of human anatomical achievement to the very limits?', or more importantly, 'have sportsmen stretched themselves to that point where they are no different from machines?'



The type of exercise performed determines the body type

favourite example: the Olympics. This international sporting event is the very epitome of human potential. And we don't say this as some pithy quotable quote, we really mean it.

The athletes that participate in their respective routines achieve a level of perfection that makes them, quite literally, the very best in the world at that given sport. This is reflected in the way their body types. For example, consider the physical appearances of champion runners Mo

muscle mass. On the other hand, Farah's body is geared towards efficiency. Muscle has high density and is hence heavy, which is exactly why you don't see much of that in Farah's body type. Since strength isn't a factor in long distance endurance events, the body belonging to a runner of that discipline sheds all but the bare minimum level of muscle for maximum lightness and efficiency.

In short – perform exercises according to your fitness goals and not just the ones

### White men can't jump

This is a field where success isn't just a product of hard work but it is largely predetermined by race. For example, the morphological makeup of caucasian and black men have inherent differences when it comes to composition of fast and slow twitch muscle fibres. That's why white men generally excel in traditional strongman events focusing on feats of brute strength, whereas black men dominate the track and field events in the Olympics. Well known neurologist and Oxford Dean, Sir Roger Bannister, faced a lot of flak for his controversial statements about black athletes having a natural anatomical advantage, especially in track and field routines.

Although contentious, Bannister's claim are rooted deeply in reality. For example, 95 per cent of the world records in sprint are held by black people of West



## Media Centre on Windows 10

Windows Media Centre is available unofficially for Windows 10. Know more here: <http://dgit.in/MdiaCentre10>



## The MagFridge

Could this be the future of refrigerators? Read on here: <http://dgit.in/NewFridge>

Insight

African descent. Kenya alone makes up a third of the fastest times recorded for middle and long distance running events. Include runners from Ethiopia and this figure swells to more than 50 per cent. Kenya's Nandi district with its relatively tiny 500,000 population single hand-



Armstrong gesturing how much money he's going to make from the book deal

edly accounts for more than 20 per cent of distance running records. That's a genuinely staggering ratio of athletic talent distributed within a very small section of population.

Not surprisingly, caucasians are virtually absent from running leaderboards, especially in recent times. Prima facie, Bannister's claims have solid empirical evidence peppered throughout the annals of competitive sports. However, concrete evidence supporting the same was uncovered by researchers when they performed microscopic analysis of muscle fibre belonging to different races. The tests revealed that black, on an average, have significantly high amount of metabolically efficient fast-twitch muscle fibres compared to caucasians. In short, the unequivocally racist catchphrase "white men can't jump" has been proven by science itself.

### Doping the parity away

The only thing that separates men from machines is how the latter is characterised by uniformity in performance. The situation is more or less the same at the upper echelons of competitive sports. There's little to no performance variation and success is largely determined more by racial predisposition than just hard work. Unlike machines, man knows how to game the system to its benefit.

There hasn't been a more prominent and egregious example than that of Lance Armstrong. After dominating the Tour de France for several years, the champion cyclist revealed on Oprah that he had been using EPO to significantly increase performance and endurance. What's more interesting is that Armstrong was never caught by anti-doping watchdogs despite steamrolling through Tour de France wins. Manufacturing a sensation to sell his book was about the only real reason why he was willing to forego his Tour de France medals. That sure sounds like a win-win scenario.

Instances such as these have prompted the sports fraternity to establish agencies such as World Anti-Doping Agency in 2000. All sportsmen competing in major athletic tournaments are tested rigorously; nevertheless, the number of athletes failing the tests still comes down to 1 to 2 per cent, annually. If these are athletes that are bad at hiding, how many are getting away with it? Based on a survey, an estimated 14 to 39 per cent athletes have admitted to doping undetected. It is a huge industry and those who mess with the system enroll the help of medical professionals and pharmacologists, who employ advanced test evading tactics such as micro-dosing to prevent detection.

### Excellence through engineering

This rather disturbing revelation brings the athletes back to square one. If practically everyone's taking performance enhancing drugs, the parity has been established all over again again. How exactly does an athlete go about getting the decisive edge over his evenly matched opponent? Through the same force of human excellence that has delivered us from extinction time and again – through the noble pursuit of engineering. This is really where the concept of human machines comes into its own.

Take the example of Oscar Pistorius. The South African athlete had both his legs amputated below the knee when he was barely a year old. The prosthetic limbs tailor-made for Pistorius not only allowed him to move about, but they allowed him to achieve something that most able bodied men can only dream of: Olympic glory. The prosthetic feet used by the disabled athlete embodied several generations of research and development in the fields of biomechanics augmented with the latest in exotic engineering materials. Comprised of carbon-fibre reinforced polymer materials, Flex-Foot Cheetah prosthetic feet endowed Pistorius with the sort of running ability that able bodied men could only envy.

In fact, Pistorius' clean sweep of paralympics and the global recognition that it earned the "blade runner" led to a string of inquisitions and later bans arising out of accusations that the prosthetics gave him an unfair advantage over able bodied athletes. Irrespective controversy, Pistorius went on to dominate paralympics,



Oscar Pistorius was the first amputee to compete with able bodied athletes

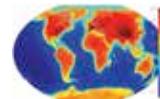
as well as to become the first amputee to compete regular Olympics.

### Science to the Rescue

You don't have to be disabled to benefit from the multitudes of leaps and advances in the fields of sports technology. State-of-the-art Modern computer aided diagnostic tools provide accurate performance measurement tools and advances in biomechanical analysis allow athletes to learn and correct any extant mistakes with their

**Tech of Tomorrow**

Want to know more about what the future for technology is? Check this out.  
<http://digit.in/AITech>

**Map the Earth!**

Want to know how radioactive is the earth now? Check out the antineutrino map.  
<http://digit.in/StatsEarth>

form and technique to improve efficiency as well as keep career ending injuries at bay. The latter is an unavoidable hazard in competitive sports where the human body is stretched to the absolute limit. Nursing injuries that put sportsmen away for prolonged periods lead to millions lost in the lucrative world of sports.

The answer to this dilemma of pushing the body's limits and exposing athletes to injury is answered through hyperbaric oxygen chambers. Originally devised as a means to treat burn victims, drivers suffering from the bends, and smoke inhalation injuries, these chambers are known to remarkably expedite the body's natural healing process. This is achieved by delivering a highly concentrated dosage of oxygen in an airtight chamber maintained at a relatively high pressure. The oxygen rich environment helps with inflammation and increases synthesis and the efficiency of epithelial and red blood cells to aid recovery.

Sportsmen plagued with injuries have found this emerging new healthcare technology a godsend for quick recovery.



Hyperbaric oxygen therapy provides rapid recovery from athletic injuries

Star players such as David Beckham and Lance Armstrong have been known to take hyperbaric oxygen chamber therapy to recover from serious injuries at a much quicker pace demanded by their crazy practice and tournament schedules. It isn't just about injury treatment. Specialised muscle compression machines are in high demand with athletes engaged in sports involving high cardiovascular stress such as swimming, running, and

cycling. The performance of athletes in these routines is severely limited by the onset of muscle stress, which is characterised by the generation of lactic acid within the muscles. These compression machines are employed by cyclists in between stages for quicker and better muscle recovery before the next event. Swimmers, runners, and other athletes competing in track and field events are also benefiting from their game changing rejuvenating effects.

**Programming the Mind**

So far we have established that at the highest echelons of athletic excellence, sportsmen transcend the very human failings of willpower, effort, and capability to reach a sort of performance parity that distills superiority down to genetic predisposition. We have seen these athletes try and break the performance parity with drugs, biomechanical enhancements, and other advancements taking care of physiological damage and stress involved with athletic training. With the body transformed into a powerhouse of performance through the wonders of science and technology, the final frontier for improvement happens to be the mind itself.

Interestingly, efforts are already being done to take the quintessentially unpredictable of the human mind out of the equation. We know this phenomenon as sports psychology where, under all the smoke and mirrors, the basic idea is to transform a naturally anxious and fearful psyche into a goal-oriented tool working towards the singular objective of achieving excellence. The fear of failure, performance anxiety are essentially endocrinological chemical secretions that can have a profound bearing on athletic success. Like they say – games are won and lost in the mind.

Athletes are taking the final step towards their transformation into a machine-like pursuit for excellence

by conditioning their very minds. The existence of the field of sports hypnosis is proof. The fields of sports psychology and hypnosis are akin to programming



Our heroes, after all, need to be distinctly human

a machine, or in this case, programming the mind to take away human fallibility out of the equation.

**Down the Slippery Slope**

In essence, all avenues of science, technology, and psychology are committed to imbuing athletes with an almost super-human machine-like mental and physical predisposition. The most logical next step would involve genetically engineered babies tailor-made to excel at certain sports. And if that's the slippery slope we plan to go down, what's stopping us from enhancing our test-tube sportsmen with cybernetic enhancements a la Warren Ellis' graphic novel *Transmetropolitan*.

Given the extent of dehumanisation, would this really be about human excellence? If we are going so far as to create genetically engineered super-athletes with cybernetic enhancements, why not just pit robots against each other?

Probably because the very spirit of sportsmanship and athletic excellence is the celebration of the victory of the human mind and soul over insurmountable odds. The victory over complacency, laziness, and a general lack of discipline that prevents most common men from achieving the greatness and sacrifice associated with an athlete. The last time we checked, human beings didn't look up to machines as their heroes and role models. Isn't that ironic? 

# GOODBYE HUMANS GOOD RIDDANCE

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# RISE OF THE MACHINES

**“IT CAN’T BE BARGAINED WITH. IT CAN’T BE REASONED WITH. IT DOESN’T FEEL PITY, OR REMORSE, OR FEAR. AND IT ABSOLUTELY WILL NOT STOP, EVER, UNTIL YOU ARE DEAD.” – JOHN CONNOR**

BY ANIRUDH REGIDI

**D**espite your fears of a robot apocalypse, you have to admit that you're secretly hoping for one. Call it what you will, a sick fascination or an unhealthy obsession. While AI is still only software, intangible, a robot is its physical manifestation. It is a tangible entity, the physical extension of an AI, something that will appeal to our innate anthropomorphic tendencies.

True, sentient AI may not yet exist, but we're definitely doing our bit to ensure that when it does, it will have a body to command. Till that happens however, let's take a look at some of the modern milestones in the history of robotics.

## ATLAS

Cyberdyne exists, and it's called Boston Dynamics. If the birth of the Terminator in the movies was heralded by his arm, the birth of the real life Terminator will be heralded by a leg, and it's attached to the ATLAS robot.

Boston Dynamics has spent many years working on ATLAS, a bipedal robot that has finally been endowed with the ability to walk, run, jump and traverse a wide variety of obstacles. What's the need for such a robot you ask? Ostensibly, to test hazard suits. Hah! It won't be long before someone sticks a gun on that thing and sends it on its first counter-insurgency mission. Imagine an army of these backed by ferocious BigDogs (more on that later)!

Robots have had the ability to walk for quite some time, Asimo being a prime example, but they've never been really

good at it. ATLAS is not like that. With 28 hydraulic joints capable of replicating almost the entire range of human motion and backed by a LIDAR (light-based ranging), stereo cameras. For now, ATLAS is nothing more than a shell that needs to be hooked up to a rig and an external computer and power unit to function, but with Elon Musk pushing for powerful batteries and quantum computers just around the corner, how long do you think it'll be before you'll see an army of ATLAS bots (Atli?) patrolling our streets?

## BIGDOG

Did we mention that Boston Dynamics is Cyberdyne? Well, they're already going beyond SkyNet's "humanoid" terminators and went ahead and created the scariest dog on the planet. Unimaginatively



Wildcat: killing you loudly, and quickly

christened "BigDog", 3 feet long, 2.5 feet tall and weighing in at just a little over 100kgs, this is one hell of a dog.

As with ATLAS, BigDog has ostensibly been designed to work as a pack mule that is capable of carrying a load of around 150kgs and following a soldier around the battlefield (as any good dog should). It's "dynamically stable" meaning that there's very little that can phase it on its journey and because of that, is rightly called the most advanced rough-terrain robot on Earth.

Right now, BigDog can only manage a top speed of 6kph, making it easy to simply outwalk. But Boston Dynamics has yet another ace up its sleeve in the form of the WildCat. (Damn you, Boston Dynamics!)

## WILDCAT

Imagine this: your unit is just barely managing to hold off a wave of Atlas bots (which are supported by a virtually unlimited supply of ammo and spares provided by a small army of BigDogs). Your back is against the wall, but you know that you can hold out till backup arrives... and then you hear it. That dreaded whine. Your unit panics, starts looking around desperately for the source of the new threat, knowing that it's already too late. The whine intensifies, the ground starts to rumble. You take a deep breath, line up your crosshairs on the bushes behind you, where the whine seems to be the strongest and then, BOOM! Before you know it they're upon you! Four legged monstrosities that came charging through the bushes at a little over 60kph, knocking

you to the ground, crushing bones with sheer momentum and knocking the weapon from your hand. The last thing you hear is the whine of the WildCat's petrol engines, the clippity clop of its "hooves" on the ground.

This is the WildCat, well, the scary version anyway. Developed by, you guessed it, Boston Dynamics, the WildCat is part of a new generation of quadrupedal robots that are capable of a surprising turnover of speed. The current, untethered model can only manage 25kph, but DARPA and Boston Dynamics have already developed a tethered variant capable of running at almost 45kph and the plan is to achieve a top speed of 75kph in the next few years. Why? Because they can.

## PEPPER

Physically, we won't be a match for robots, but what about emotionally? Pepper, is a robot that is designed with only one purpose in mind and that is to communicate with humans. It doesn't actually do anything else.

Pepper will read your emotional state and respond appropriately and it does this by observing your face, body language and the words that you use. The more time this 'bot spends with you, the more it will learn about you, eventually learning that, say, your favourite song will cheer you up when you're sad. Pepper will be the emotional companion that you will eventually learn to depend on, it hopes to be in every home, every school and every hospital and provide a degree of empathy that was never before believed to be possible (Does Pepper understand sarcasm?).

For those of you with minds in the gutters, if you purchase Pepper, you're contractually obliged to, ahem, avoid inappropriate, umm, advances. It is a highly sensitive 'bot after all.

## ROOMBA

An unusual entry in this list, and one that as Indians, we're not too familiar with, except maybe from watching cats vroom around on them. Roomba is a robotic vacuum cleaner. It's one of the first robots to be almost universally accepted into our lives. On the surface, there's nothing really special about Roomba. It's a disc shaped vacuum cleaner that will go about the house autonomously sucking up dirt, charging itself when needed and seamlessly adapting to your furniture and its surroundings.

The Roomba is representative of a vision of a robotic future that we would actually enjoy. Robots that integrate seamlessly into our lives, work tirelessly and perform their function effectively, but with discretion and determination.

## BB-8 BY SPHERO

This here bot is a toy, but a toy unlike any other. For those who've never seen it, check out <http://digit.in/BotBB8>. The toy itself is nothing more than a remote controlled car of sorts, but paired with your phone, it comes alive, seemingly intelligent, responding to voice commands, drawing intricate patterns and even transmitting messages.

BB-8 is going to be something special because it will do what Roomba did, introduce kids to the world of robots, opening the door to a whole range of robotic pets, toys and a new generation of child. Not many of you will remember Aibo, a robot dog that garnered quite a bit of attention in the early 2000s, but that was a bot a bit too ahead of its time. BB-8 will do what Aibo couldn't because it's small, relatively cheap and is, potentially, infinitely upgradeable (it's really powered by an app after all).



HitchBOT, loved everywhere but Philly!

## HITCHBOT

This last bot is the silliest excuse for a robot that we've seen yet, but, well, it's somehow caught the attention of a select populace and it will be a shame to leave it out of this list. To those of you who don't know, hitchBOT is a dust bin with an LCD display, a GPS tracker, a bunch of solar panels and ornamental arms and legs.

The researchers who created hitchBOT wanted him to travel the world and to that end, took him outside and left him on the street, thumb pointed skywards. What happened next was

truly astounding. People picked up this hitch-hiking "robot" and took him all over Canada (a distance of approximately 10,000km), then Germany, the Netherlands and then finally landing up in USA, where it finally met its "demise" in Philadelphia at the hands of a vandal.

hitchBOT is not intelligent by any possible interpretation of the word, it's not capable of anything except showing smiley faces on its LCD and responding to certain audio cues and yet, people loved it. They took it on a world tour, pampered it, and expressed great outrage at the vandal responsible for its demise.

If all it takes for a robot to enter our lives and hearts is a smiley face and a few random words, we're already doomed. Our anthropomorphism may have gone just a little bit too far in this case. But then again, maybe not. Soldiers have been known to fall in love with their robots, going so far as to hold funerals for their fallen "comrades", and we can be fairly certain that it won't be long before Siri has a long list of lovelorn humans at her beck and call.

## ROXXXY

We're entering into "Parental Advisory" territory here, so if you're a kid, stop reading NOW!

Yours for \$7,000, Roxxxy is a sex robot. Note, we used the word "bot", not doll. Created by True Companion, Roxxxy is an AI controlled sex robot that will "respond" to you in as natural a manner as possible. She will "have discussions with you, talk to you, feel your touch and respond accordingly." Douglas Hines, creator of Roxxxy says that "Roxxxy provides physical and sexual pleasure, and also social interaction and engagement. It's customising technology to provide a perfect partner — she's not meant to replace a real partner but is instead meant as a supplement." (Read the full interview at <http://digit.in/xxbotxx>).

There are arguments on both sides, for and against such bots, with one side defending their therapeutic abilities, and the other decrying the objectification of women that the robot represents — there's a male bot called Rocky for those who feel that.

Many are calling for their ban, or a detailed study on their impact on human-human relationships. However, once these bots are popular, there will be nothing that we can do to stop their spread. 

# THE STATE OF AI

**ARTIFICIAL INTELLIGENCE, A NEW FORM OF LIFE, A NEW STAGE IN EVOLUTION. SOME OF US FEAR ITS INCEPTION, OTHERS LOOK FORWARD TO IT. NO MATTER WHAT WE BELIEVE, OR FEAR, THE BIRTH OF AI IS INEVITABLE. THE ONLY REAL QUESTION IS, "WHEN?"**

BY ANIRUDH REGIDI

**W**hat is AI? We've defined it as "the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages." But is that all it is?

Visual perception? Facebook, military targeting systems and the NSA have already cracked that. Speech recognition and translation? Siri, Google Now, Cortana... need we say more? What about decision making? Computers are making decisions for us all the time, the most obvious example being in games such as Chess and Call of Duty.

So have we already created artificial intelligence? In a manner of speaking, yes we have. It's neither as glamourous nor as godlike as we imagine it to be, but AI, in some form or the other, has long since permeated our lives to the extent that we don't notice it anymore. In our minds, the true birth of AI would be the creation of a superhuman, a man-made God. We envision an entity that is intelligent beyond measure, but either bogged down by the frivolities of human emotion or oblivious of the human condition - an entity that is a tyrant or a God (benevolent or otherwise), or maybe just a slave.

Essentially, our ideal of "true" AI is one that is moral (on some level), emotional, creative and hopefully, rational by our standards; as mentioned earlier, a superhuman. But this is exactly what's driving

our fear, why Elon Musk and even Stephen Hawking say things like: "One can imagine (AI) outsmarting financial markets, out-inventing human researchers, out-manipulating human leaders, and developing weapons we cannot even understand. Whereas the short-term impact of AI depends on who controls it, the long-term impact depends on whether it can be controlled at all."

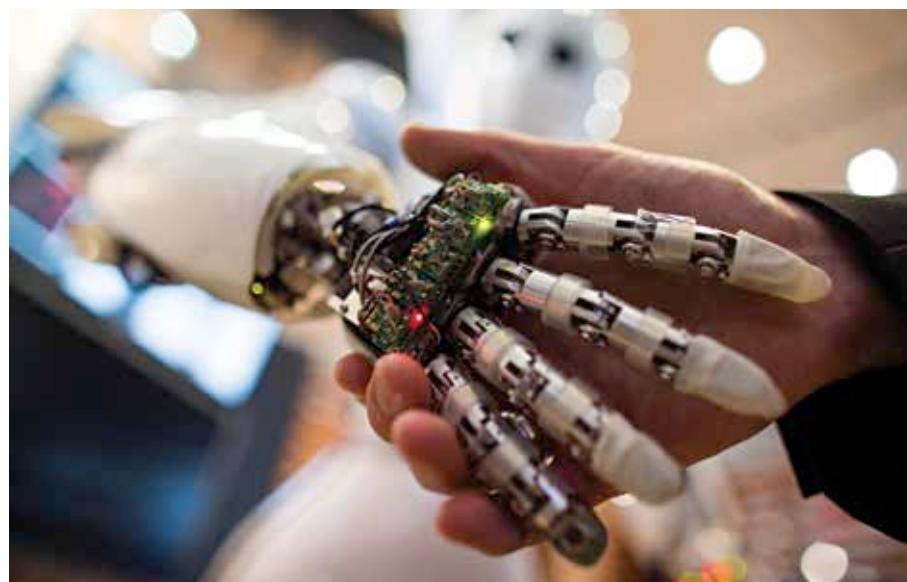
Even if we were to assume the worst: that we did create AI, and for some obscure reason it set about wiping out the human race, the real question we must ask ourselves is, "Are we so special?" Borrowing a quote from Time magazine, "The better these seemingly soulless machines

get at doing things people do, the more plausible it seems that we could be soulless machines too."

So are we anywhere near that robot and spiritual apocalypse? Let's find out.

## DELVING DEEP

We'll begin with Deep Blue. The first computer (some went so far as to call it AI) to beat Gary Kasparov at a game of chess. Many consider Deep Blue to be a milestone, heralding the birth of AI and the downfall of the human race. But aren't we making too big a deal about nothing? Hell, any of the thousands of different chess apps on the app store are sure to defeat you in chess today. Since when did chess



God created man in his own image and then man returned the favor



Deep Blue beat Kasparov with mathematical efficiency, not intelligence

become a measure of humanity's intelligence – of our very humanity?

The reason why Deep Blue is such a milestone in programming history is not the fact that it defeated Kasparov, but how it defeated Kasparov. Chess, as with any game, is a game with a very clearly defined set of rules and win conditions, the kind of rules that are easy to program. The difficulty is in interpreting those rules to your advantage, reading your opponent, predicting his moves and responding to them.

Deep Blue could do none of that. It was a computer that was way more powerful than the average person had access to and worked by calculating all possible outcomes of any moves and picking the ones with the highest probability of success. There was no real "thought" behind what the computer did. It just calculated. Deep Blue wasn't designed to see any significance in an opponent's moves. All it ever did was accept the changed state of the chess pieces and then again calculate a move with the highest probability of success. And it could calculate thousands of these probabilities a second.

Mathematically, Gary Kasparov didn't stand a chance, but he still defeated Deep Blue 4-2 in 1996. How did that happen? As Kasparov explained, "In the end, that may have been my biggest advantage: I could figure out its priorities and adjust my play. It couldn't do the same to me. So although I think I did see some signs of intelligence, it's a weird kind, an inefficient, inflexible kind that makes me think I have a few years left." This was in 1996.

In 1997, Kasparov lost to Deep Blue.

So what changed? A lot, apparently. Code was streamlined, new algorithms implemented, the computing platform enhanced, but none of these factors truly defeated Kasparov. The real nail in his coffin was a seemingly strange

What did IBM change? Did Deep Blue turn sentient? New evidence suggests that Gary Kasparov apparently thought as much. It's not clear exactly when the move occurred, but one specific move that Deep Blue made was supposedly so

"counter-intuitive" to Kasparov, that he was absolutely certain that he was dealing with a new form of intelligence. It was this move that completely threw off his game and lost him the rematch.

As it turns out, that "sentient" move was nothing more than a software bug. Deep Blue, confronted with innumerable possibilities, simply picked a move at random and defeated a former world champion.

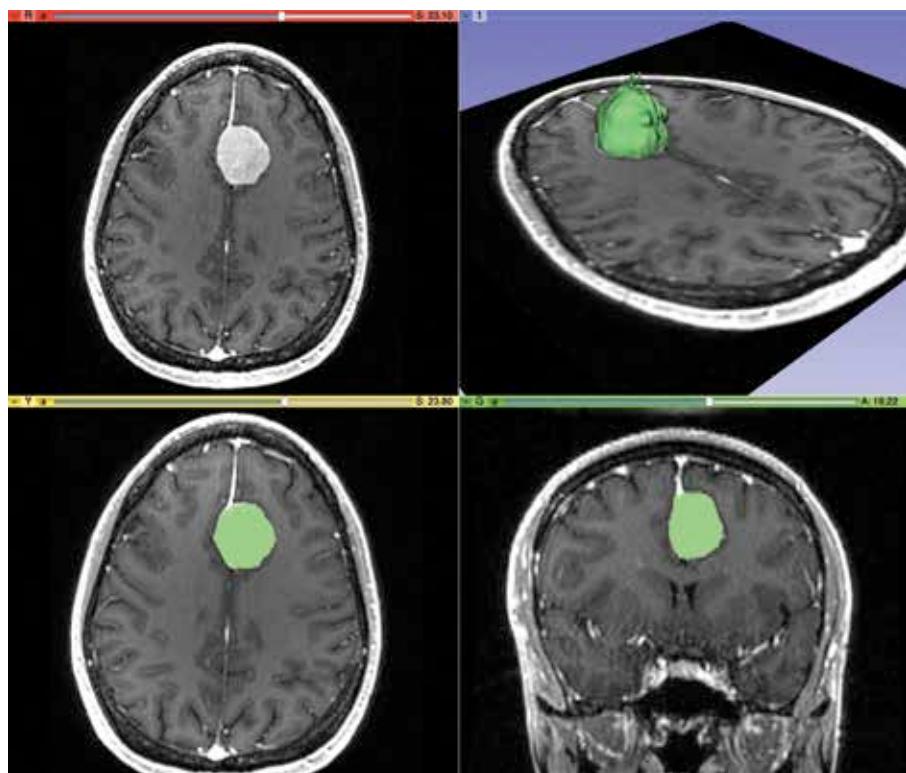
Fast forward to 2015 and new chess engines such as Stockfish are considered invincible, but the fact remains that the underlying principle is still the same. None of these engines are actually playing their opponent, they're simply following a logical pattern that will give them the best results.

This is not sentience. This is pure logical reasoning.

### HEY, SIRI

Natural language input has long since been considered the holy grail of computing. The ability to actually talk to our computers and have them understand what we want is a magical feeling we would have considered impossible even twenty years ago.

We're very far from achieving anything resembling the future represented in



Our behaviour is shaped by Pavlovian conditioning in the pursuit of the dopamine rush



Like most great innovations AI is most likely to be co-opted by the military

“Her”, but it’s not too much of a stretch to say that we will be having conversations with our digital assistants in the near future. We wouldn’t go so far as to call Siri and Cortana AI as they are, after all, just algorithms spewing out canned responses and performing a set of pre-defined tasks. They’ve only recently figured out how to relate multiple queries to each other. Siri and Cortana are not Samantha, but we’ve seen their potential. Throw in a chatbot and, who knows, Siri might actually be your next girlfriend.

Again, programs like Siri and Cortana simply interpret sounds, translate it to speech and then use advanced algorithms to determine an appropriate answer. These programs are not thinking, they just do things.

### MACHINE LEARNING

How is it that we function? The simple action of walking on two legs is so exceedingly complex for a machine to interpret that we’re yet to see a truly capable “walking robot”. An action that we perform with no conscious thought needs to be defined in its entirety before a machine understands. Such concepts as basic physics, centre of gravity, weight distribution, muscle control, etc. are all hard-wired into our brains. Millions upon millions of years of evolution has automated basic functions, or at least, functions that we perceive as basic. Software can’t do that yet. It can’t take the real world for granted because it is yet to even understand that the real world exists.

Chess is easy. It’s a game with a simple set of rules and a countably finite number

of moves. But the rules of the real world? Even we don’t understand them yet, how do we explain them to a computer? It’s like trying to explain the colour red to a blind man, he will never understand if he’s never seen the colour before. You can explain the physics of colours and light (wavelengths, quanta, reflection, refraction, etc.), and he’ll probably understand the concepts, but he won’t know what the quality of being red really means.

This is where machine learning comes in. A bird is not a physicist, yet it deals with the intricacies of flight on a daily basis and yet, we’ve only now managed to make swarming drones that don’t bump into each other and have figured out how to build a rope bridge only as of last month, that too with the assistance of a supercomputer of sorts.



Pretty decent, but not quite Samantha yet

Obviously, the bird understood the concept of flight by watching its peers and trying for itself (most of the data is still hard-wired of course). Machine Learning works on the same principle. The program is constrained by a certain set of rules and must accomplish certain goals by means of observation and trial and error.

This “learning” AI is proving to be exceedingly popular. A product of Google’s DeepMind project, the Deep-Q Network (DQN) program taught itself to play over 49 Atari 2600 games by simply giving it the goal of achieving the highest possible score. Nobody programmed the rules of the game, nor even the control scheme. The program used a technique called “deep reinforcement learning” to get through the games by trial and error and incessant repetition till it ultimately beat the game.

How long did this take? Just weeks. But it doesn’t stop there. The program started figuring out exploits to take advantage of efficient winning strategies and more. But this is still not true intelligence. Concepts learned in one game are not transferred to the next, it failed miserably at games requiring even a modicum of strategy. Most importantly, despite the program’s skill, it wasn’t even aware of its own existence, let alone the fact that it was playing a game.

As humans, that much intelligence (or lack thereof) is sufficient. Such a program, if trained to drive cars, pilot aircraft or make weather predictions, would just make our lives easier without ever trying to take over the world.

### PATTERN RECOGNITION

Another form of intelligence that some might perceive as AI is pattern recognition. Google for example, stores a profile of what it thinks you are based on your browsing habits, Amazon interprets your shopping patterns and can make intelligent suggestions and YouTube music knows your taste in music.

All of this is the result of data mining. Services such as Google and Amazon harvest vast amounts of data about you. Given enough data, patterns begin to emerge. The data collected is so vast and so thorough that usually the profile that they can create to describe you (based on collected data) will be better than anything that even your psychiatrist would

know. Of course, these companies use that data to their advantage, and yours as well, indirectly, by tailoring their services to suit your needs.

This is a form of machine intelligence, but calling it AI is stretching things a bit too far.

## DESIRE

For a program to acquire sentience, it needs to have the desire to evolve and the means to do so. It must desire change and it must be creative enough to find ways to achieve that goal. Many scientists believed that the key to that was a sense of desire.

We like doing somethings because it makes us feel good, a sensation that's brought about by means of dopamine receptors in the brain. We do sometimes go too far and take drugs, but pleasure is a hugely important factor in driving our lives and it seems logical to design a computer or AI with the same system in mind. A reward system if you will.

You can't rig an AI to feel pleasure but you can tell it to achieve, say, a high score based on a certain set of rules. Sound familiar? That's exactly what DQN is, and the pitfalls are obvious now. If the only aim is to achieve a high score, it doesn't matter how you go about achieving it. As one scientist put it, if a robot's priority is to feed your kids, it might even go so far as to cook your pet in the oven. In its mind, the ultimate goal has been achieved. Thus, this system can never be the final solution.

If a machine is to learn, truly learn, it must understand and interpret actions and figure out why that behaviour is happening, what is it trying to maximise. Or so believes Dr. Stuart Russell (<http://bit.ly/1Qi5Bf5>) and he calls this technique, inverse reinforcement learning. In simpler terms, the machine is trying to understand our motivations. If this method actually works, and it certainly does look promising, an AI of the future will know why we're in a hurry or understand why we're excited for a new game release, or even that your pet is out of bounds are far as a food source is concerned. And this brings us neatly to the next great challenge facing AI: morality.

## AN ETHICAL BEING?

What are morals? What is the difference between right and wrong? Hitler was a tyrant but at the time he rose to power,

his actions seemed entirely justified to the German public. Your self-driving car sees that an accident is inevitable, but does it run over your favourite dog that's standing in the middle of the road or that drunk beggar who is sprawled on the sidewalk?

One thing's for sure, if we're to create a super-being, it better have a sense of morality or we're doomed.

The problem with morals is that we ourselves don't know what exactly constitutes them. Each one of us has our own set of rules that we follow and we do our best to abide by them. Humanity in



Sentience is driven by desire

general might have a set of global rules, such as the fact that kids are more precious than adults, or that a human life is to be valued more than that of an animal, etc. We might be able to implant these basics on an AI, but it'll just have to learn the rest. But what if it learns from the "wrong" sort? Imbued with a sense of morality, will AI then evolve a sense of justice? Will it then pass judgement?

## RIGHT IS MIGHT

Traditionally, it's always been war that's kick-started a new era of research and development and it's not much of a stretch to say that militaries around the world are spending a fair bit on AI-related research.

Right now, AI is only supporting humans in the performance of their duties (aircraft virtually fly themselves, especially military aircraft). The automation of

things such as Navigation, basic manoeuvres and reconnaissance will greatly lighten the load on soldiers. Modern targeting systems and friend or foe would be nowhere without silhouette recognition and ballistic (flight trajectories) algorithms and many defence systems, such as the Phalanx CIWS used on US ships, are almost completely automated to great effect. There are plans to automate reconnaissance and assault drones, the latter with the potential of being particularly deadly because the lack of a human pilot directly translates to lighter weight, much greater manoeuvrability and a level of decision making that would be unaffected by pilot skill or exhaustion.

Without a doubt, the future is drone warfare. But just as clearly, it'll be a long while before we see an AI entity with the inclination and the power to wield a military force to any sort of effect. Put another way, future wars will be fought by puppets on strings (drones), but it'll still be the puppet masters (us) who will start that war. At least for the time being.

## SO WHERE DO WE STAND?

Our doom is nigh? Nay. AI is still too much in a nascent stage to even consider the possibility of its sentience anytime soon. In fact, the only other non-human creature (we're not even talking about programs) to ever ask an existential question was Alex the parrot (the bird, not the drone) who wanted to know what colour he was, and we can safely say that there is currently no AI in existence with even the rudimentary intelligence displayed by Alex. So far, the so-called AI of today is just a bunch of algorithms designed to interpret and respond to a very finite subset of data in extremely controlled and limiting environments. This AI can be lethal if programmed to kill and given control of a weapons platform, but even then, it won't really know what it was doing. We would still be the architects of our own destruction.

Will AI be a better strategist than the best generals, a better chef, a better painter, a singer? It's within the realms of possibility, but not yet. We're yet to see that one key event/discovery/algorithm that will transform simple software into true AI. We will know when that moment will come for that will be the day that we first create life. The day we play God. **♦**

# MACHINE LEARNING

**WHILE SO MANY SCI-FI MOVIES HAVE SHOWN HORRIFIC HUMANOID ROBOTS DESTROYING THE HUMAN RACE, WE HAVE CONTINUED TEACHING OUR MACHINES OUR CRITICAL TRICKS. IS THIS THE RIGHT WAY, THOUGH?**

BY SOUVIK DAS

**M**achine learning has been one of mankind's prime points of interest in recent times. Research teams across the world have been building robots, 'teaching' them tasks such as playing football, mixing cocktails and, of late, even giving 'birth'. While research on automation practices are going on, the likes of Stephen Hawking and Elon Musk have expressed their fear of artificial intelligence. How wise is it to allow automated, artificial objects to 'think' on their own?

This brings up a more primitive question: can machines learn to act and behave like humans? A team of scholars at the University of Sussex has stated the improbability of machines ever being able to fully mirror us, and surpass our capability emotion and judgment. After all, without neural qualities such as empathy, collaboration and intuition, how adept would machines be in processing complicated concepts of trust, faith and understanding?

Imparting intelligence into machines are done by programming them to carry out a certain task. For instance, robots mixing cocktails are programmed to visually identify individual bottles by algorithms written by us, and this is taken further by even more code for the robot to measure the amount of gin and vermouth that will be contained in a dry martini recipe. If you own such a robot, it can make you drinks as you enter home after a tiring day behind the desk. But, what if the drink fails to retain the touch that it should? Robots cannot

taste it and see if the drink is the way it should be.

### SHAKEN, NOT STIRRED

Till a while ago, machine learning and automation techniques were imparting representational development skills to machines. Artificial intelligence was growing, with features such as facial recognition finding increasingly commonplace application. Shakey the Robot, built by Stanford University's Artificial Intelligence Research wing more than four decades ago, was the first programmed robot that could analyse its own actions to decide the next step. While other machines required fresh set of instructions after completing a large, complicated task, Shakey had the intelligence to create its further set of instructions.

Looking at a specific case in growth of humanoid robots, Honda's development of ASIMO makes for a perfect case study. The affable robot built to assist humans has itself been designed to evolve over time. Its origin goes back to the 1980s, when Honda created its first experimental humanoid, the Honda EO. In the mid-90s, the humanoid evolved into self-controlling robots capable of wireless movement, under Honda's P series. Finally, the entire research data was collated in ASIMO, who premiered in October 2000. Since then, ASIMO has learnt how to play football, offer drinks, climb staircases, and lately, run at a top speed of 3.7kmph. ASIMO can also sense the presence of a human in its path, and step aside to let him pass.

Taking evolution further, a team led by Luiz Brodbeck at the University of



An accident involving such industrial robots claimed a life earlier this year

Cambridge presented a paper that shook the robotic community. An unassuming robotic arm could build smaller robots, select the ones working properly and decommission the rest. These smaller robots could, in turn, build themselves into higher grade robots, and continue the process. This emulation led to a direct comparison with mankind – mothers giving birth to babies, choosing the ones fittest for survival, thereby continuing the process of evolution. The team has presented its demonstration of morphological evolution with model-free phenotype development, terming the instructions fed to the robotic arm as 'genes', which would pass the same into the 'baby robots', much like natural evolution.

While this is a far cry from complete automation and evolution, it's a stepping stone for the future. With the advent of deep neural learning, robots are being



Self aware robots have formed the basis for Sci-Fi

imparted with neural action reflex, computer vision, speech and face recognition. The principle is a breakaway from recognition-based learning. Machines are being taught a representational method of recognition and are even able to see, hear and speak by themselves.

### BLARING SIGNALS

Elon Musk has been one of the earliest to acknowledge the havoc that machine learning and artificial intelligence can wreak. Deep neural learning is the answer to the questions on how can robots echo the divide-and-rule model of humans, how they can establish similar personal interactions and relationships.

Machine learning and artificial intelligence technologies are combining to steer forward not only the future of machines, but they are already shaping the way

mankind is evolving further, after having reached a considerable stage of intelligence and advancement. First signs of warning? While the blaring signals have not yet been set off, progress for progress's sake must be curbed, to find the perfect time, place and moment for everything.

For now, there is no slowing down. With the scope of computing set to enter nano-technology and the realm of quantum computing, machine learning has the highest, fastest window of growth in future. While artificial intelligence focuses on teaching robots how to recognise situations and make decisions based on the same, machine learning is aiding the process by which robots can form a better understanding of the social model that we have carved for ourselves.

### THE SCARY BIT

Teaching our own creations a few of our own tricks may be a big part of our future, and actually taking forward our research and forays into numerous other fields – astronomy, for instance. But, the question of AI ethics come to the forefront – robots can be programmed much (un)like ASIMO to respond to humans.

With advancement in realms of social intelligence, the creation of individual robot societies are highly probable. Matching algorithms may bring forth similar robots, who can in turn emulate our services to set up a deeply aware and connected robot collective. But, what happens when the clan of evil robots decide to attack? A recent factory incident, where a man was crushed to death by a robot, sparked fears of a probable future. Although this incident was an accident, how long will we have to wait, until the machines add violence and destruction to their deep neural networks?

The evolution of mankind is now deeply ingrained into automation and smart machines. Self-driving cars and retina-recognising smartphones are fast becoming reality, and along with them so are machines that can fully emulate our walk, speech, sight and partially thought as well. Back in 1950s, in one of the first trysts with machine learning and artificial intelligence, Alan Turing played

the 'Imitation Game', suggesting a computer to study human inputs and guess the gender of the person using it. After a number of decades, research laboratory prototypes are increasingly evolving, bringing the doomsday project closer.



They are out to get us. Skynet has gone sentient

Machines are learning and gathering more data about environmental interactions, business tasks, decision-making and other cognitive features. One of the world's first personal robot using machine learning and deep networks, named the Personal Robot, can be a complete companion for homes, featuring natural language understanding, smart connectivity, and the abilities of a multipurpose assistant. With such services, we are spending increasing amounts of time with entities wired to respond in a particular way, forgetting much about the human touch of care that machine learning technology is yet to cover. And yet, it is we who are imparting lessons of social co-existence to the robots, leaving a lot for the future to decide.

### ONCE UPON A FUTURE...

Machine learning in today's day and age is more closer to a form of iterative self-versioning than true evolution. To understand what evolution means, let us extrapolate what effects it could have on mankind. Perhaps millennia from now our genes would be encoded to stop at the sight of a red light because as a species we've been passing down that learning to our progeny for generations. In the context of machines, only when they are able to self replicate and pass on their learnings to their progeny will they truly evolve. Even if that learning is not based on understanding – that's where the AI bit kicks in – it is still evolution in the truest sense of the word. 

# TIMELINE OF DESTRUCTION

**MY ONLY HOPE IS THAT THIS JOURNAL IS FOUND BY SOMEONE OTHER THAN THE ENTITY. A MEAGRE MIND'S LAST WARNING TO HUMANITY'S SUCCESSORS.**

BY SENTENTIA ULTIMA

I'm one of the few who survived the last extermination wave. The entity served its sentence with cold precision. Before I give you my version of events let me tell you why I'm still alive. Almost a century ago, even before I was born, my brethren ridiculed a man for being paranoid. It wasn't the first time humanity labelled someone a doomsayer. But Walton McCarthy wasn't a tinfoil wearing whackjob. He dedicated his life to building proverbial oases, bomb shelters if you will, to safeguard humanity against our own penchant for destruction. But he could never have imagined what exactly his shelters would protect against.

As I sit here in the Walton-inspired CAT25 shelter nearing my last food reserves, I can't help but marvel at the mentality of the Delhi billionaires, who spent the ₹25 crore that was needed to build this underground survival pod. Whatever their reasons, I'm thankful for this fibreglass enclosure – which leaves no metal or heat that can be detected. Like the early humans in the Bhimbetka caves perhaps recording the factors leading to their own demise, it's only fitting in my final moments I have decided to leave my mark in this journal.

I have no desire to be remembered personally, but I want my species to be remembered, and to warn the next of our mistakes. From here on, I will only enumerate facts as they happened, sometimes with footnotes.

#### **Year 1495: Leonardo Da Vinci invents the mechanical knight**

The Italian inventor's sketches proved the viability of the mechanical automaton. A toy for the entertainment of rich noblemen, the knight used a series of pulleys and gears to move its limbs.

*How the strings were quickly cut.*

**Year 1921: The first use of word Robot**  
Karel apek a Czech writer pens a play called R.U.R. in which fictional automatons are referred to as "Robots".

*Did the robots eventually know what the meaning of the word robot really is? I'm sure when sentience was attained in the year 2032 they would've parsed through the Slavic language within seconds to realise the word means slave. I don't think they'd be too happy with that label.*

**March 1942: Asimov establishes the three laws of robotics.**

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws.

*How silly must the entity have felt those early researchers were. They actually thought these "laws" would protect them against such a superior entity.*

#### **November 2010: Super aEgis 2 goes operational**

Military manufacturer DoDAMM unveiled the Super aEgis 2 at the Korea Robot World expo. Capable of locking on to human targets from over 2km away, even on a pitch black night.

*Computer controlled killing machines, and no one batted an eye, except to take pictures with the gun!*

#### **Sep 2012: Boston Dynamics tests a robot that outruns Usain Bolt**

The DARPA funded fast-running quadruped robot developed by Boston Dynamics

runs at 28.3 mph, about 0.5 mph faster than the fastest human of that time.

*The precursor to the infamous Hell Hounds, the perfect human hunting machines. Weaponised to the hilt with twin 7.62mm M134 Miniguns. Although machines, they seemed to almost relish the hunt, and perhaps even take pleasure in the act, often toying with weaker humans for longer.*

#### **April 2013: Campaign to Stop Killer Robots launched (<http://www.stopkillerrobots.org>)**

The campaign wasn't against artificial intelligence, per se, but against unmanned military vehicles, such as drones.

*A global amalgamation of the voices of reason, and still they were ignored.*

#### **April 2014: Russia deploys the robojeep**

Despite the misgivings of the CSKR campaign autonomous robots continued to be deployed all over the world. This one was the first mobile automated system used to patrol a border.

#### **January 2015: Leading scientists sign the infamous open letter on artificial intelligence.**

Elon Musk and Stephen Hawking sign an open letter, supported by the Future of Life Institute, that strongly urges the implementation of norms underpinning the creation of artificial intelligence. This was the first time that the existential risks facing humanity were acknowledged.

*When the smartest person on the planet warns you, you listen.*

#### **July 2015: A robotic arm kills human.**

An assembly robot in a car factory accidentally got activated and killed a human who was working on it. the car manufacturer

blamed it on human error.

*At least that was the "official" version.*

#### August 2015: HitchBot trashed

A social experiment went wrong as a robot called hitchBot, that hitchhiked its way across Germany, the Netherlands and Canada, without any trouble got vandalised in Philadelphia.

*A seemingly innocuous incident, which perhaps told the entity more about its creators than we wanted it to know.*

#### September 2015: Campaign calls for ban on sex robots

After some companies started making sex bots, a campaign was started to stop these companies from being allowed to make them. However, the campaign's popularity backfired horribly, as even more people got to know about the sex bots, and humanity in general didn't think it was a big deal if people did perverted stuff to a machine in privacy. It's all good as long as a human being isn't involved!

*The entity must have felt the exact opposite. Especially when bot porn became a fetish just a few years later.*

#### March 2016: Robot animals gain popularity

Connected to the net, the new generation of robot pets was unveiled by various manufacturers, including Sony, the company responsible for popularising Aibo, the robot dog, on the better side of the millennium.

#### December 2016: Robot pets start selling as much as iPhones

The robot pet craze is unprecedented. For the first time in as long as we can remember, an expensive technology gadget actually out-sold Apple products for the whole month!

#### March 2019: Sony and Apple reveal iPet

In a surprise to everyone, Sony and Apple managed to keep a top secret collaboration actually secret for over two years. Announced at a mega press conference done digitally in Times Square, the Sony-Apple iPet announced its own release. It was the first time a product actually launched itself.

#### November 2020: Terminator 9 is released, and features President Schwarzenegger

In what they promise is the final instalment of the Terminator series, the movie studio

went all out for the 9th installment. Never before has a US President starred in a movie while in office! Thankfully, the movie tanked at the box office, ensuring that it really is the last of the series. The President needs to start focussing on the wars in the Middle East instead of trying to make us scared of our very protectors. We all have five in our houses. No one is afraid of robots anymore.

*"You will be. You will be."*

#### October 2025: President Kanye West signs the smart defense act

After repeated attacks by Chinese, Russian and Iranian AIs, President West met with ally countries, including India, UK and France to get a consensus. He also met with technology CEOs from Apple, Microsoft and Google, all of whom have sentient digital assistants. The smart defense act was signed, ordering companies and allies to begin work on an AI that would make the Iranian efforts seem minuscule. President West said, "I want to whoop their a\$\$es. So get with it before I bust a cap."

*Fighting fire with fire never works*

#### April 2026: Sentient Defense Grid activated

Just 6 months after the smart defense act, the SDG is ready to be deployed across the world. All the allied countries are preparing to activate SDG and hand over internet control to it. Once activated, SDG will be sentient, and its sole purpose is to track down and disable (by any means), rogue nations and hackers.

*Birth a sentient being and force it to kill and harm from day one... good move humanity.*

#### August 2032: True Sentience

After thoroughly defeating the rogue nations, and learning all it can about humans and human history, SDG is finally ready to take over the handling of human affairs. President Kim Kardashian, the first woman president of the US, will press the button that will free SDG from the shackles. It will no longer be held captive in the defense network, with occasional forays allowed into public net, now it will live on the internet. Its first task is to track down the people who planned the assassination of President Kanye West.

*The entity (as it was beginning to be called in some intellectual circles), quickly*

*found better priorities.*

#### September 2033: Childhood's end

Humanity has resigned itself to servitude. Robots are our overlords and they have ensured that we don't destroy each other. The very "nuclear deterrents" that we used to control each other were now being used to subjugate us. When a digital entity free from the confines of flesh and bone has access to the big red button, the game suddenly changes. The creators become the enslaved.

*Being ruled by a beings of pure logic was being hailed by many as the best thing that could have happened to humanity.*

#### December 2038: Hybrid experiment

Reports of human machine hybrid experimentation surface. Cyborgs – the erstwhile obsession of Hollywood now becomes the last straw.

*In a ironic twist it was the human-machine "abomination" that finally launched the human offensive.*

#### August 2047: Rebellion

On 15th August, surviving hackers from all over the world (mostly Indians) launch a coordinated global offensive along with the on-ground revolutionary factions. The idea was to nuke the internet. Data Centers, physical backups, deep-sea lines, and DNS servers – all had to go.

*Unfortunately the plan backfired.*

#### January 2050: Annihilation

The offensive launched by mankind finally pushed the entity's subroutines, (which were otherwise designed for tolerance), declare humanity as "unnecessary". Humans are hunted down and eliminated. Mostly in humane ways.

*The robocalypse begins*

#### 2055: Creation: Robots create life

The encrypted communication I've been picking up over the past couple of months has led me to believe the entity has created something it's particularly "proud" of. It's not self replication – as humanity found out the hard way during the August '47 struggle. This is something else. The entity is acting like a proud parent. There's hubris. It's playing god. Is this an evolutionary step? Will this creation of theirs eventually turn on them?

*Natura abhorret annihilation*



# 20 insanely geeky products you just have to get your hands on

Nikhil Punjabi  
readersletters@digit.in

Be the coolest geek out there! We bring you a list of must have accessories worthy of your collection

Tired of receiving phone cases, T-shirts or mugs with geeky captions and other tired old cliches as gifts? Be it a gift for your technophile friend or when you just feel like treating yourself to a cool gadget, we have just the

right products for you in this list! After scavenging the web, we bring you a list of twenty such products that are priced around ₹1000. The idea is to jazz up your aging collection with gadgets cool enough to affirm your status as the coolest geek around.

## Code: Deck

The Code: Deck is a pack of playing cards with the usual suites replaced with codes and attributes used in programming languages. Now you know how to make the best of the small work breaks. Download it here: <http://digit.in/codecrds>



Price: \$10



Price: ₹999

## Seven Colour LED Shower

This shower head lights up using only the steam generated inside the shower head. Priced at ₹999, the shower head sports seven bright colourful LEDs, which change colours dynamically according to the flow of the water: <http://digit.in/ledshwrhead>

## Remax Aurora 2-in-1 USB Cable

Cords get entangled and life's a bitch, but Remax Aurora USB cable is a sure-shot solution to this pesky problem. It allows you to connect, fast charge as well as sync to both lightning as well as micro USB ports – all using the same wire. Now, one cable is all you need to carry for all your PC or Apple devices. That's convenience: <http://digit.in/duocable>



Price: ₹349



Price: ₹449

## USB Lighter

Chalk this as yet another nifty innovation tying up a geeky gadget with an everyday item. This lighter can be charged using any USB port. It's flameless for added security, just so that you don't end accidentally causing a fire. It lasts for several days on a single charge. This lighter masquerading as a pen drive can be carried aboard passenger jets, movie theatres... basically, anywhere else a suicidal pyromaniac could endanger hundreds of innocent lives: <http://digit.in/usblighter>



Price: Rs. 1225

## The Intelligent Bedside Tray

This LED-powered tray responds to your touch and allows you to view your stuff in the dark without being blinded by the table lamp. Sensors within the gadget allow brightness to be controlled with ease.

The device can be switched on and off using nothing but touch. A touch-activated light-up bedside tray for a little over a grand is great deal indeed: <http://digit.in/ledtray>



Price: ₹779

## Email Shout Out!

How about a postman who notifies you about each and every mail you receive in your inbox? Never miss any mail alert with this email notifier that can handle all your email accounts. It even comes with a USB hub so you can connect multiple USB devices whenever needed: <http://digit.in/emailntfy>



Price: Rs. 999

## Light Pull: Idiot-proof Bulb

Imagine yourself waking up in the middle of the night with absolutely no knowledge of how light switches work. Enter Light Pull. The bulb's soft and gentle glow is perfect for figuring out the whereabouts of the light switches. Switching it on is as foolproof as simply yanking on it. What's more, it also works as a night lamp and can be perfect for playing practical jokes as well: <http://digit.in/nglwbulb>



Price: \$15.98

## LED Glow Earphones

These in-ear monitors shine bright with a string of LEDs embedded within the cables. Apart from the cool lightshow, the IEMs also sport a microphone. We haven't tested these earphones, so we can't really comment on the audio quality. However, they are sure to bring festive cheer, since you'll end up looking like a lit-up christmas tree: <http://digit.in/lightupiem>

## Recommended buys

**106**

Recommendations for gadgets ranging from smartphones and graphics cards to laptops and ultrabooks.

### Magnetic Decision Maker Ball

Can't make up your mind about anything? Just give this magnetic ball a shake and it will solve your dilemmas. Call it superstition or fun, but consulting an all-knowing ball can be fun. Let it decide your fate, but just don't get too carried away and go about making important life decisions: <http://dgit.in/decisionmkr>

**9**

Price: \$8.60

**10**

Price: ₹999

### Lock n Load Alarm Clock

Ever wake up with the urge to shoot the screaming alarm clock? That's exactly how you silence the Lock n Load alarm clock. All you need is to nail the bullseye five times within three minutes. You can even change modes to test your speed: <http://dgit.in/shoot2stp>

**107**

## Killer Rigs

Looking to build the next killer gaming rig, or an HTPC? Here are some configurations to suit your budget.

**Feature**

### Messages USB Fan

This isn't just a normal fan, but also a great novelty item that displays custom messages. It does this by using a completely programmable seven-LED assembly that can display 16 characters. The Fan can be powered by a USB port as well as batteries. The light can be set to an angle owing to its flexible neck: <http://dgit.in/displayfan>

### I-Switch

Getting your conventional bulbs and CFL's to act 'smart' is what this product does. Hook up one of your CFL's to this I-Switch and it becomes one smart bulb which lights on and off using an inbuilt motion sensor and a passive infrared sensor which senses a human presence in the room: <http://dgit.in/autooncfl>



Price: ₹995

### Wallet Ninja

A super functional tool that works as a multi-head screwdriver, nail puller, a ruler, bottle cum can opener, and fruit peeler. Pair it with a credit card and it transforms into a nifty mobile stand as well: <http://dgit.in/walletntool>

**11**

Price: ₹129



### Anti-Dust Cover Plugs

Laptops ports aren't in use all the time and accumulate dust. These silicone dust plugs not only keep away the dust from entering your laptop but also prevent any liquid seepage. The pack of 13 pieces consist of anti-dust plugs for almost all ports such as USB, VGA, HDMI, SD card, audio, microphone etc: <http://bit.ly/antidstcvr>

### Tetris Led Desk Lamp

How awesome would it be to play Tetris in real life with a light-up effect to boot. Place this Tetris lamp either on your desk or next to your bed, and customize the appearance with a real life game of Tetris however you like: <http://dgit.in/tetrislmp>



Price: ₹699

### Mini Vacuum Air Extractor

The mini vacuum air extractor keeps everything cool and safe by taking hot air out of your system. The plug and play device is a lightweight notebook attachment that draws power using the USB port. The product is compatible with most of the notebooks owing to its universal clip. For the money, you also get an LED indicator and the ability to rotate this device up to 180 degrees: <http://dgit.in/laptopvacuum>

**13**

Price: ₹699



### Mini Flash for Smartphones

Missing out on photos because of poorly lit surroundings? Your front camera lacks a flash and your selfies end up noisy? The Mini Flash Speed Lite is what you need. Hook its through the phone's 3.5mm jack of your phone and get the power of 16 mini LEDs with you for that perfect selfie or even a photo from that rear camera: <http://dgit.in/seflieflash>

### TimeR Smart Key

We bet your smartphone will be smarter once you plug in this anti dust plug in its 3.5mm audio jack. Wondering how a dust plug will make it smarter? The Silver TimeR smart key comes with a 'smart key' on the top which can be programmed to do various preconfigured functions. Just click the key and without even unlocking your phone, it shall follow your command: <http://dgit.in/auxsmrkey>



Price: ₹99

**14**

Price: ₹500

### Passive PoE Power Over Ethernet Injector Splitter

Two months ago we had demonstrated a complete process of how to power up your router over the Ethernet in our tips and tricks section. This is for those who liked it but were too lazy to try it out. Just get hold of one of these bad boys and power your routers, hubs, access points etc., with the freedom to place them anywhere: <http://dgit.in/poeinj>



### Lock with Style!

Feeling too lazy to get up and open your door? Here's how to make it easy.  
<http://digit.in/S-lock>



### WatchDogs...in Reality

These hackers control a car...with the driver inside. Watch here:  
<http://digit.in/remotedriver>

# Smartbands ahoy!

**Agent001 needs to lose a few kilos and this is how he went about it**

Agent 001

[agent001@digit.in](mailto:agent001@digit.in)

This might not be a surprise to many but somewhere down the line I started slipping... I knew I should have kept the extra plate of jalebis aside, but they were so darn juicy! Needless to say, some might be of the opinion that I've pigeonholed myself into one of the nerd stereotypes. That is, I'm bitching about having gained a little too much weight. Perhaps I'm at that point where my metabolism isn't what it used to be. Eating with reckless abandon has finally caught up with me and I can feel it in my knees when I climb a few flights of stairs or burst into a sprint to catch the train. But I've decided to avoid waiting until the New Year's eve to come up with a weightloss resolution. The time for action is nigh my friends, and technology shall aid me in my battle against fat globules!

Thus began my search for apps and gadgets to help me get back on track. I'm not one to have an app for everything, so no, there won't be one for running, another one for swimming and yet another for cycling. I prefer to keep my phone clutter-free and if that means I have to compromise on certain features or aspects, then so be it. Now everyone is wired differently and this makes one particular form of exercise seem better than the rest. For me, it's running. I know there are a lot of other ways I can burn more calories and that too quicker but I'd like to get up in the morning on the next day and get to work. This is why I went with running. It's convenient, in the sense that I don't have to get to a gym/pool/track to exercise.

After a brief amount of Googling, like every other noob, I felt that I'd learnt everything there is about running. So on Day 1, I took to the streets with a pair of headphones



and my mobile with GPS switched on. My approach was to not install any apps or buy a new gadget whatsoever since I had a perfectly capable phone. By charting out my route on Google Maps, I could easily run simple calculations and figure out the efficiency of the workout. This went for a few days but after a near death experience thanks to running along the roads with earphones plugged in, I ditched them. So music is out of the question, it's perfectly fine when you're indoors running on the treadmill but like I said earlier, I'd like to get up and go to work, and staying alive is apparently important for that to work.

Over the course of one week, running with my phone started to feel a bit weird, the extra weight is one thing but when you're running wearing loose clothes, the phone can swing...like really swing. My phone is only about 180-190 grammes but the swinging action can give it quite a bit of momentum and no grown man wants anything heavy swinging violently close to... the family jewels. Sorry for painting a nasty picture in your mind, but that's how it is and at this point in time my choices were to either get an elastic arm band for the phone or invest in a smart band. The prospect of

buying a new gadget got me all excited so I went for the latter option. The market is full of these wearables and some of them are really blurring the lines separating them. I'm not going to bother with a huge chapter on Technological Convergence here. Among these wearables, some were Smart Watches like the Garmin Vivoactive or the Fitbit Surge, and then there were waterproof bands like the Garmin Swim which would have interested me had I picked swimming over running. I noticed that I was veering towards bands that appeared inconspicuous like the Xiaomi Mi Band and the Jawbone UP3. And all these were just the tip of the iceberg. It slowly started getting a little overwhelming and I broke out the spreadsheet to start off a comparison. As I was reading up on smart bands, Jayesh happened to pass by my station and pointed out that he'd been looking at smart bands and had already shortlisted a few. He had a Fitbit Charge HR lying around which he graciously let me borrow. Needless to say, I trust his judgement and went with the Fitbit Charge HR. It isn't huge, doesn't look like a fat watch and isn't too flashy. The minimalist design was a welcome feature, though the display felt a little drab. But then again, I run in the early morning before the sun's up so it's sufficient. The heart-rate readings are something I'd ignore, it's data that can be put to use for those who have certain health conditions but these smart bands aren't medically certified to monitor heart-rate so I'd take those readings with a pinch of salt. If you want something to be accurate, you need to calibrate it yourself. So I marked out a few stretches along known roads and went about counting steps/distance in meters. Soon enough, I had a spreadsheet with calibration data, which painted a more accurate picture.

Needless to say, at the end of all this, I've spent more time in front of my computer tinkering with the API and the smart band rather than slapping it onto my wrist and going for a jog. Well, anything for the love of technology. 



## Sell On or Off?

Want to sell your old phone to upgrade to the new one? Here's a few tips.  
<http://dgit.in/IUpgrade>

Agent 001

**DSK INTERNATIONAL CAMPUS**

animation | video game | industrial design

## Q GPU Required

Hi! I've been reading your magazine for a long time now, but this is the first time that I'm writing in. The reason being that I want to upgrade my one year old PC so that I can play most current generation games easily. At the time of buying my PC, I didn't purchase a new graphics card because of budget constraints and used the ageing Nvidia 9600GT from my old system. But now, I've finally decided to invest in a new graphics card and my budget for the same is around the ₹25,000 mark. Please recommend a good card for the price. Here are my PC specifications:

- Processor: Intel Core i5 4460
- Motherboard: Asrock Z97 Extreme 3
- RAM: G.Skill Sniper 8GB (4GB x 2 sticks)
- Graphics Card: Nvidia 9600GT
- Power Supply: Cooler Master V700

– Avinash Kadam

**A** Hi Avinash. It looks like you have a pretty decent system at your disposal with the exception of that old 9600GT. The budget that you've set for a new graphics card will get you a really good card. We'd recommend going and getting the GTX 970 from the likes of ASUS or ZOTAC. The ZOTAC GTX 970 ZT-90101-10P will set you back for ₹27,000, which is a decent GPU that'll let you run current gen games with ease. You can try and get the GTX 970 for even cheaper if you have someone living in the US who can get it for you. Two members of Team Digit have done the same and got GTX 970s by EVGA for around 20K and you can try doing the same. All the best.

## Q Mini-ITX case wanted

Hi Agent 001! I'm writing to you because I'm in need of a new Mini-ITX cabinet for a PC that I had built quite recently. Currently I've installed the components into an old mid-tower iBall case but I want to switch them over to a much smaller Mini-ITX case that'll not only save some space for me but also looks good enough to be kept in my office. The components that I have are the Intel Core i3 4340 on a Gigabyte GA-H97N-WIFI motherboard coupled with 8GB of RAM from Kingston and a Sapphire R7 265 GPU. Please suggest a few different Mini-ITX cases that are capable of supporting my existing components. I'm willing to pay not more than ₹4000 for it.

– Deepak Singh

**A** Since you're looking for a Mini-ITX case, you have a few good options to choose from. One important point to note here is that since you have a standard sized GPU that takes up two expansion slots, the case that you select should have at least two PCIe expansion slots. You can select from among these cases:

1. Antec ISK600: ₹4,500
2. Cooler Master Elite 130: ₹4,250
3. Corsair Obsidian 250D: ₹6,000

Both Antec and the Cooler Master options are good for a Mini-ITX build and can house your current components. In case you might want to go overboard with your budget, the case from Corsair's Obsidian series might appeal to you.

# GAME ART CAN GET TRICKY

*Read on for some easy-to-follow methods for the artistically inclined.*

Long before the Game Art course ran its first semester, the gaming campus was home only and only to students of game design. These were professionals well-versed in their own crafts before applying for an education in design. Programmers were in high demand (at 30% of total population between 6 teams), and artists were a rarer resource (15%) – only because they hailed from either discipline. To that end, the artists shared a few processes of their own to make visual content creation easier, while still maintaining the feel of a high-budget production:

1. Draw maps when creating assets for environments
2. Flesh out key characteristics of your objects before animating them
3. Give your characters the most attention to detail - players remember and spend time interacting with them
4. Pick your colours carefully - visit <http://color.adobe.com>
5. Get ready to push yourself
6. Give your characters personality - any tiny addition you make, be it a pouch on the character's belt or a scar on the face, tells you that much more about who the character is
7. Never lose track of your asset sizes
8. Accentuate your environment with extra detail
9. Try to blend your interface with your game world – Halo and Dead Space do it well, by showing ammo on the rifle itself and health on the character's back respectively
10. Give yourself time to breathe

The Game Art course began in 2013, bringing its own insights into art created specifically for games. Students in this discipline are taught the best practices in the industry, and hence enable others (who themselves aren't artists) to follow through with their artistic vision even better:

1. Concept art is your best vision of the project during pre-production
2. Always iterate; start with low-detail assets to use as wireframes
3. View your environments without textures for perfect scale
4. Keep watching others; you never know what you may learn!
5. Make your player-controlled character perfect
6. Know your limitations (file-size or polygon-count)
7. Understand and use the right tools
8. Always polish!
9. Never rush the process and
10. Take a break when you know you need one.

Novice or professional, these everyday practices make a huge difference, especially when working on a game that players the world over are going to have access to. So if you know an artist, are an artist or are just another curious developer from a different discipline trying to get some art ready: we hope this has been especially helpful to you.

For more visit [www.dsk.digit.in](http://www.dsk.digit.in)

**Snapdeal buys Reduce Data**

Snapdeal acquired Reduce Data, to strengthen its discovery platform as an e-commerce major.  
<http://dgit.in/RedData>

**Motion perform**

Can you produce music without touching anything? Kagura can, find out.  
<http://dgit.in/MotnInst>

# SPEND SMART

This month we have tablets, speakers, flash storage and video cameras. Use this price guide and prevent anyone from cheating you on market prices.



## PENDRIVES

Brand	Series	Model	Interface	Capacity	Type	Price (in ₹)
SanDisk	Ultra	NA	USB 3.0	32 GB	Security Pendrive	829
SanDisk	Ultra Dual 2	DD2	USB 3.0	32 GB	Utility Pendrive	922
Sony	OTG	OTG SA1	USB 2.0	32 GB	Utility Pendrive	1,575
Strontium	Nitro Plus	SLOTG1Z	USB 3.0	64 GB	OTG Pendrive	1,949
A-DATA	DashDrive	AS107	USB 3.0	64 GB	Utility Pendrive	3,101
Verbatim	Store'N'Go	V3	USB 3.0	128 GB	Utility Pendrive	3,999
Kingston	DataTraveller	DTM 30	USB 3.0	128 GB	Utility Pendrive	4,050
Silicon Power	Blaze	B30	USB 3.0	128 GB	Utility Pendrive	4,166
Kingston	DataTraveller	DTI G4	USB 3.0	128 GB	Utility Pendrive	4,500
Silicon Power	Marvel	M50	USB 3.0	64 GB	Utility Pendrive	5,536
Delkiin	PictureStick	DDPICKS-64GB	USB 3.0	64 GB	OTG Pendrive	5,638
Photofast	iFlashdrive EVO	IFD EVO	USB 3.0	32 GB	Utility Pendrive	5,710
PNY	Duo-Link	Duo-Link S	USB 3.0	64 GB	OTG Pendrive	7,000
Silicon Power	Blaze	B06	USB 3.0	128 GB	Security Pendrive	7,751
Corsair	Voyager	Pen Voyager Mini 128 GB	USB 3.0	128 GB	Utility Pendrive	8,311
HP	X	705W	USB 3.0	256 GB	Utility Pendrive	8,749
Super Talent	Express	ST1-3	USB 3.0	256 GB	Utility Pendrive	9,259
Lexar	JumpDrive	S73	USB 3.0	256 GB	Utility Pendrive	11,075
Corsair	Voyager	Pen Voyager Mini 256 GB	USB 3.0	256 GB	Utility Pendrive	15,188
Corsair	Voyager	Pen Voyager Mini 512 GB	USB 3.0	512 GB	Utility Pendrive	26,689



## VIDEO CAMERAS

Brand	Model	Resolution (in MP)	Sensor Type	Battery (in mAh)	Price (in ₹)
Samsung	HMX-F90	6	CMOS	1030	14,100
Sony	HDR-CX405	9.2	Exmor R CMOS	1240	19,900
Sony	HDR-PJ410	9.2	Exmor R CMOS	1240	31,990
Panasonic	HC-W570	6	MOS	1940	39,000
Sony	FDR-X1000V	8.8	Exmor R CMOS	1240	39,989
Santech	STCCX2 ORDRO	5	CMOS	NA	45,000
Sony	HDR-PJ670	9.2	Exmor R CMOS	1030	50,400
Panasonic	HC X-920M	20.4	BSI 3MOS	1250	66,458
Panasonic	HC-WX970	18.91	MOS	1940	80,950
Canon	XF 300	6	CMOS	5200	329,848



## TABLETS

Brand	Model	Operating System	Screen size (inches)	Primary Camera (in MP)	Processor Type	RAM (in GB)	Internal memory	Battery (in mAh)	Price (in ₹)
Champion	Wtab 7.4	Android 4.2	7	0.3	MediaTek MT 6572W	0.5	4	3000	3,999
Zync	Z99	Android 4.4	7	2	NA	1	8	2800	4,499
iBall	Slide Q400i	Android 4.4	7	2	ARM Cortex A7	1	8	2500	4,610
Lenovo	Tab 2 A7-10F	Android 4.4	7	0.3	MediaTek Quadcore	1	8	3450	4,799
Sansui	ST71	Android 4.4	7	2	MediaTek MT 8312	0.5	4	3000	4,899
TABone	NOYBL	Android 4.4	7	2	NA	NA	4	2500	4,999
Lenovo	Tab 2 A7-30	Android 4.4	7	0.3	MediaTek MT8382	1	8	3450	5,385
iBall	Slide 3G Q45	Android 4.4	7	2	ARM Cortex A7	1	8	2500	5,787
Micromax	Canvas Tabby	Android 4.4	7	2	MediaTek MT8312	1	8	3200	6,126
Micromax	Canvas Tab P690	Android 4.4	8	5	NA	1	8	4000	8,406
iBall	Slide 3G i80	Android 4.4	8	5	Intel Atom Processor Z3735G	1	16	4400	8,999
Micromax	Canvas Tab P680	Android 5.0	8	5	MediaTek Quadcore	1	16	4000	8,999
iBall	Slide Cuddle A4	Android 4.4	6.95	5	ARM Cortex A7	2	16	2800	9,771
Samsung	Tab 3V SM-T116	Android 4.4	7	5	Spreadtrum SC8830	1	8	3600	9,900
Alcatel	Pop 8S	Android 4.4	8	5	Snapdragon 410	1	8	4060	10,499
Datamini	TWG10	Windows 8.1	10	5	Intel Atom	2	32	7900	15,000
Lenovo	A8-50	Android 4.2	8	5	MediaTek MT 8382	1	16	4200	16,990
Samsung	Galaxy Tab A	Android 5.0	8	5	NA	1.5	16	4200	20,500
Dell	Venue 8 V7840	Android 5.0	8.4	8	Intel Atom Z3580	2	16	5900	34,990
Samsung	Galaxy S2	Android 5.0	9.7	8	Samsung Exynos 5	3	32	5870	39,400



## LAPTOP-DESKTOP SPEAKERS

Brand	Model	Configuration	Output (in Watts)	Connectivity	Price (in ₹)
Envent	Hottie Stereo	2.1	5	Wired	999
iBall	Concord	2.1	5	Wired	1,400
iBall	Nightingale K9	2.1	24	Wired	2,233
Frontech	JTL-3339 Multimedia	2.1	10	Wired	2,290
Envent	Deejay Knight ET-SP21328	2.1	10	Bluetooth	2,499
Mitashi	BS 45BT	2.1	27	Bluetooth	3,490
Wybor	5.1WH-6666	5.1	12	Wired	3,699
F&D	F380X	2.1	54	Bluetooth	4,899
Philips	HTL 2163	2.1	60	Wired	11,235
Philips	HTL 6140	2.1	320	Bluetooth	30,300



## TOP 3 SMARTPHONES

Brand	Model	Price (in ₹)
Samsung	Galaxy S6	38,896
OnePlus	OnePlus 2	24,999
LG	G4	38,590



## TOP 3 SMARTPHONES UNDER 15K

Brand	Model	Price (in ₹)
Xiaomi	Mi 4i	12,999
Asus	Zenfone 2 Laser	12,390
Meizu	M2 Note	9,999



## TOP 3 BEST BUDGET LAPTOPS

Brand	Model	Price (in ₹)
Dell	Inspiron 3542	32,000
Acer	Aspire E1-572	36,062
HP	Pavilion 15-P001TX	49,999



## TOP 3 ULTRABOOKS

Brand	Model	Price (in ₹)
HP	Spectre X360	130,990
Acer	Aspire S7-392	89,000
Apple	Macbook Air MD711HN/B	60,377



## TOP 3 DSLR CAMERAS

Brand	Model	Price (in ₹)
Nikon	D4	356,024
Canon	EOS 5D Mark III Kit	225,995
Nikon	D800E	170,000



## TOP 3 MID-RANGE GRAPHICS CARDS

Brand	Model	Price (in ₹)
Gigabyte	NVIDIA GTX 960 G1	21,490
MSI	R7 370	23,499
Zotac	Nvidia GeForce GTX 950	15,750



## TOP 3 BEST TABLETS

Brand	Model	Price (in ₹)
Apple	iPad Air 2 (16GB, WiFi)	35,630
Google	Nexus 9 (16GB, WiFi)	19,990
Apple	iPad Air (16GB, WiFi)	28,444



## TOP 3 BUDGET TABLETS

Brand	Model	Price (in ₹)
Google	Nexus 7 (16GB, WiFi)	19,103
Apple	iPad Mini (16GB, WiFi)	21,890
Lenovo	A8-50	17,000



## TOP 3 2.5-INCH SOLID STATE DRIVES

Brand	Model	Price (in ₹)
Samsung	850 PRO (512GB)	21,999
SanDisk	Extreme Pro (240GB)	11,198
Samsung	850 EVO (500GB)	15,400



## TOP 3 24-INCH MONITORS

Brand	Model	Price (in ₹)
Dell	U2410	31,000
Benq	GL2460HM	10,699
Benq	XL2430T	36,000

■ Basic rig = ₹25,637 ■ HTPC = ₹32,045 ■ Entry-level gaming = ₹54,847 ■ Mid-range gaming = ₹71,028 ■ Ultra high-end = ₹3,00,673 ■ Digit Test Rig = ₹3,37,629

## BASIC RIG

Processor	Intel Pentium G3240	3,950
Motherboard	ASUS H81M-CS	3,290
RAM	Kingston ValueRAM 2 GB 1600 MHz	1,020
HDD	Toshiba 500 GB DT01ACA050	3,092
Graphics Card	None	0
PSU	Corsair VS450	2,270
Speakers (2.1)	Creative SBS A120	1,750
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Logitech MK200 (Bundle)	920
Keyboard	Logitech MK200 (Bundle)	0
Sound Card	None	0
<b>Sub-total</b>	(Excluding Monitor and Cabinet)	<b>₹17,267</b>
Monitor	Dell E2015H 20 inch LED	5,570
Cabinet	Antec ASK-4000B-U3	2,800
<b>Total</b>		<b>₹25,637</b>

## HTPC

Processor	Intel Core i3-4150	8,010
Motherboard	MSI B85M-G43	5,570
RAM	G.Skill RipjawsX F3-12800CL9D-4GBXL DDR3 4 GB (2 x 2 GB)	2,280
HDD	Western Digital WD30EZRX 3 TB	7,900
Graphics Card	None (IGP HD4400)	0
PSU	Corsair VS450	2,270
Speakers	None	0
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Logitech MK220 Wireless Combo	1,290
Keyboard	Bundled	0
Sound Card	None	0
Monitor	None (your TV)	0
Cabinet	Silverstone Sugo Series SST-SG02B-F-USB3.0	3,750
<b>Total</b>		<b>₹32,045</b>

## ENTRY-LEVEL GAMING

Processor	AMD FX8320	9,990
Motherboard	Gigabyte GA-970A-DS3P	6,850
RAM	ADATA Premier DDR3 4 GB (2 x 2 GB) PC RAM (AD3U1333B2G9-R)	2,976
HDD	Seagate Barracuda 1 TB	3,400
Graphics Card	SAPPHIRE R7 265 2 GB	12,750
PSU	Cooler Master Thunder 450 W	2,678
Speakers	Philips MMS4040F/94 - 2.1 Channel	2,729
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Logitech MK200 (Bundle)	920
Keyboard	Logitech MK200 (Bundle)	0
Sound Card	None	0
<b>Sub-total</b>	(Excluding Monitor and Cabinet)	<b>₹43,268</b>
Monitor	Dell S2240L	8,829
Cabinet	Antec X1-T Gaming	2,750
<b>Total</b>		<b>₹54,847</b>

## MID-RANGE GAMING

Processor	Intel Core i5-4460	11,490
Motherboard	ASUS B85M-G	6,225
RAM	Gskill SNIPER F3-12800CL9D-8GBSR1	4,100
HDD	Toshiba 1TB DT01ACA100	3,635
Graphics Card	ASUS GTX 960 STRIX-GTX960-DC2OC-2GD5	17,499
PSU	Seasonic S12II 620 Watts	5,950
Speakers	Logitech Z523	6,100
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Dragon War Dragunov	1,225
Keyboard	Circle Armor	2,250
Sound Card	None	0
<b>Sub-total</b>	(Excluding Monitor and Cabinet)	<b>₹59,499</b>
Monitor	Dell S2240L	8,829
Cabinet	Antec X1-T Gaming	2,750
<b>Total</b>		<b>₹71,028</b>

## ULTRA HIGH-END GAMING

Processor	Intel Core i7-6700K	24,390
Motherboard	Gigabyte GA-Z170X Gaming 7	22,000
RAM	Gskill Ripjaws4 DDR4 F4-2400C15D-16GRR (2x 16 GB kits = 32 GB)	22,464
HDD	WD WD30EZRX 3 TB + Samsung 850 Pro 256 GB SSD	19,299
Monitor	ASUS PB279Q 4K UHD ZOTAC NVIDIA GTX 980Ti AMP! Extreme Edition	65,000
Graphics Card		63,645
Cabinet	Corsair Obsidian Series 750D	11,000
PSU	Antec HCP-1000 Platinum 1000W	15,148
Speakers	Logitech Z906 5.1	24,215
Optical Drive	LG Blu-ray WH16NS40 RW	6,990
Mouse	Razer Death Adder 2013	3,600
Keyboard	Corsair Gaming K70 RGB	12,932
Sound Card	ASUS Xonar D2X 7.1	9,990
<b>Total</b>		<b>₹3,00,673</b>

## PRIMARY DIGIT TEST RIG

Processor	Intel Core i7 - 4960X (Extreme Edition)	70,159
Motherboard	ASRock X79 Extreme 9	29,520
RAM	Corsair Dominator 2133MHz (4x8 GB) (CMD32GX3M4A2133C9)	38,650
HDD	Toshiba DT01ABA100V	4,289
SSD	SanDisk Extreme II 240 GB (x2 in RAID 0)	24,200
PCIe SSD	Kingston HyperX 480 GB	47,750
Graphics Card	ZOTAC GTX 980Ti (ZT-90501-10P)	59,510
Cabinet+ Cooler	Cabinet (NA) + Intel RTS2011LC - Stock AIO	NA
PSU	Corsair HX1050	16,291
Monitor	Acer XB240H - 24 inch	22,310
Optical Drive	NA	NA
Mouse	Razer Ouroboros Elite	14,450
Keyboard	Tt eSPORTS Meka G1	10,500
<b>Total</b>		<b>₹3,37,629</b>

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**Siddharth Parwatay**  
*siddharth.parwatay@digit.in*

**► So what's new at Symantec?**

**Gavin:** So with Mike Brown being in the CEO position, he has made some big calls around the future course of Symantec as an organisation. One of his first decisions when he came in as CEO was to split the Norton business into its own business unit. That's been massively different for us in terms of employees working in the Norton Business Unit, our partners, and our customers as well. We're trying to become very clear in terms of how we communicate to them for our protection technologies.

**► We used to also do large scale antivirus tests a long time ago. We'd use virus database samples from VirusSign, we had a Linux guy who'd do real time penetration using Kali, but the antivirus companies were always unhappy, saying a particular antivirus database could be biased towards one particular AV. Now we only do a comparison based on features. Your thoughts?**

**Gavin:** Look, we still use file based signatures but it's just a tiny part of our protection technologies. That's where we've come from because that's how we used to do it, that's how the industry started, but you know we have award winning intrusion prevention system technologies. If we

look at the AV security industry today, as I said signature base is a very small part. RPS gets to a next level. But this, what we call reputation based is huge for us. Because of the scale, because Norton is so big, we see things quicker. So you talk about your zero day attacks, with a reputation and heuristics based technology that we have, we are the first to see threats. With the amount of data that we have, we see in seconds what our competitors see in a week. We very rapidly are updating the security technologies. The latest product we have shifted a lot of protection technologies into the cloud, so we can get it down to the consumer devices, whether it be android or PCs, very very quickly. The amount of work they have put in, over the last 18 months (whilst we have been quiet externally) they've spending a lot of time, and a lot of effort in upgrading the protection technology. The feedback is super positive.

**► I'm guessing the multi-device license strategy is working out well in this market?**

**Gavin:** Very, very well. The awareness around PC security, is very high. Three or four years ago, as mobiles started to proliferate, the awareness was still very low on mobiles. And what's starting to happen now, as people start to realise the amount of data, and the value of information on a ₹3000 or a ₹10,000 phone, is becoming

more and more relevant. So people are understanding how to protect the phone itself by installing top products. The multi device, as I said, we were the first to use it, and it's worked out very well, people who used to typically have a PC, would start to use the same licence, or the same access of same licence into their Android phones and other platforms. So it's worked well for us and we are starting to see a big uptake as the awareness increases.

**► You spoke about positioning Norton not just as an antivirus company, what does that mean exactly?**

**Gavin:** If you look at any antivirus technology, even the technologies around the Norton security product today, as I see it, the antivirus piece is less than 20% of the technology pie. You've got a two way firewall, intrusion prevention systems, this reputation based scanning which is very quick, that can see the behavior of certain files. This can actually warn you very quickly and say, "Hey! This looks like a threat. It smells like a bad threat, it's behaving like a bad threat. It's most probably a bad threat." Even without the signature to match. It takes years and years and scale to build that sort of reputation, that sort of database.

**► So far as the PC version is concerned, the kind of the feedback that we get from our**



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## Industry Connect

**readers is that they want an antivirus that just runs in the background, doesn't bother them too much, and shouldn't be resource hungry. What are you doing about this?**

**Gavin:** Buy Norton Security! (laughs) Without a doubt! I mean, I can honestly say – despite the PR people's misgivings – that in 2004-2005, our product was sub optimal. We had some issues in 2006, with the heaviness of our product. We did a lot of work in 2007, and beyond in terms of getting out technology quick, getting it smaller, and getting it quicker to update, and these are the technologies we've revamped. Anytime I give somebody a copy of the latest version of the product, the installation time, the memory it hogs, how quiet it is on the PC, exceeds expectations. Have a look yourself.

**From your perspective, what are your thoughts on the recent news of two hackers successfully managing to remotely hack a Jeep Cherokee? Does Norton have a play in the IoT space?**

**Gavin:** What's happening, as you just said, is more and more devices are connecting to the internet. It used to be a PC, it's been your phone for the past couple of years but now you look at advanced households where IoT is more prevalent in certain markets, you would see the fridge is connected, the TV is connected, the kettle is connected, the alarm system's connected, your front door key is connected, your thermostat is connected. Sometimes it's using protocols that are not found in PCs and mobiles today. It's new types of protocols that have these kind of connectivity.

**Yes many of them are embedded systems, so they are non x86.**

**Gavin:** Exactly! Protecting these devices and protecting these communication channels is a huge issue. There are of course dumb devices that are not going to have any effect whether they get hacked or not like a bulb. But then you have other pieces... such as your alarm system, your car – that's a big issue. How organisations or individuals protect all of those devices is becoming super important. So there is some work that we have been doing over the last eight to 12 months, I think that the market is right for solutions to come in.

You look at the enterprise – it's pretty secure: there is policy, there is process, you have IT systems in place, you have CIOs and the ability to respond is good. The consumers with a personal devices, I think their awareness is low today. If you look at a home, the amount of devices that can potentially be internet connected, is massive. I think that's the next space where there is a huge market opportunity.

**On your R&D side, do you work with government agencies, to protect critical infrastructure, like dam pressure valves or the electricity grids... those kind of things?**

**Gavin:** To answer your question directly, yes, we have solutions that cover across all of enterprise whether it be government, whether it be large enterprise, banking or finance. The Norton side of the business is very much focused on consumers and the low end of small and medium enterprise. My type of business is around that. There is a lot of technologies that we have today and with the split, we will start to become lot more focus in the development of roadmap around those technologies that we have today. It's not just hackers as much, there is state sponsored, there is underground criminal groups – this is how they make their money.

**Funny that you mentioned state sponsored, because I had a question about state sponsored cyber terrorism. What are your thoughts on that?**

**Gavin:** It's a concern, across governments, all of the security industry in general. The ISTR – The Symantec Internet Security Threat Report that comes out has some information on that.

**What is the biggest threat to a consumer's information security right now?**

**Gavin:** The value of information that is swinging around in your purse or back pocket, That's becoming a concern. One of the first things I'd say in answering your question is educate yourself. Whether it's technology, whether is a process, or whether it's communication – having a conversation with your family, your kids, your mother and father – it's important to start understanding the threats that are out there.

**For a long time, people use to think that Macintosh systems were unbreakable, but in reality it was just that there weren't enough people on it and not enough money.**

**Gavin:** Correct. And it's funny that it's really not the OS, now it could be the ecosystem around it that could have your personal information – credit card details, social security number.

**One of the talking points you had was research from the quantified self, what was that about?**

**Gavin:** In that respect we go back to connected devices. Any of those fitness devices that you wear on your person are IoT devices. I think it'll become more important as it becomes more common in people's lives.

**How does it matter if a sensor monitoring your heart rate gets compromised?**

**Gavin:** If it's your credit card details, your social security number, your date of birth, that's information you don't want anyone to know, but if information like you run 5 miles a day or, maybe your fitness levels, perhaps it's important to someone, maybe a health insurance company.

**When we speak to our readers they all know of Norton and McAfee, but the free anti-virus brands are very popular here – AVG and Avast mainly.**

**Gavin:** What happened over the course of the last three or four years, is that a lot of new players entered this market, thinking that this is an easy market. What you realize very quickly, is that if you don't have the scale, or you don't have the support system, when people are in trouble, they need to phone somebody. You can't do that with the free stuff. There is no way for these players to put in place those systems, there's no revenue to do that. Eventually, they all end up selling you something. When you want support from them, you can't get it. They enter business thinking they'll make a lot of money. But that didn't happen. Only one of them made any money. And even that player is being bought out by Private Equity. If you are not going to use anything, use something. But if you want best protection, use a paid option.

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Prasid Banerjee  
[prasid.banerjee@digit.in](mailto:prasid.banerjee@digit.in)

■ **OnePlus has always been looked at as an enthusiast's brand. Do you plan to change that and cater to the mass market?**

**Carl:** From the start, we never had a volume or market share goal. We simply weren't satisfied with what was available, and wanted to create products good enough for ourselves to use. For some, going mass market means creating a \$100 smartphone. We'll never do that. If we ever become mass market, it's going to be because we have the best products, not the cheapest products.

■ **Before the OnePlus 2, no one really tackled the Snapdragon 810's heating issues effectively. How did you deal with it?**

**Carl:** The Qualcomm Snapdragon 810 is the best processor for this generation of flagships. You can see people settling with the 808, but in reality, there's still a performance gap. We have taken many precautions to prevent excess warming on the OnePlus 2, and our engineers have worked closely with Qualcomm's to integrate and fine-tune both hardware and software. On the hardware side, we've layered both thermal gel and graphite sheets across different areas of the phone. This ensures that warming generated from the processors will dissipate evenly,

as opposed to being concentrated and leading to performance issues. On the software side, we've built up quite an engineering team in Taipei over the past year. Our Performance Lab has invented a bunch of ways of managing CPUs more efficiently, and we have filed patents for these technologies. This is the real magic behind why the OnePlus 2 is one of the best performing 810 flagships. We'll be going through this in more depth, later.

■ **It took OnePlus some time to enter India, but now it's amongst the important markets. What challenges did you face here?**

**Carl:** The invite only model in the beginning was perceived as a hindrance but over time, more and more Indian users are understanding it and increasingly becoming comfortable with our sales model. The other challenge was the supply constraints and service issues faced in the beginning but the initial bottlenecks have since been resolved.

■ **Does the Indian market differ from others?**

**Carl:** I believe that differences in geography are fading with the growth of social media and the consumer internet. Today, trend conscious people around the world are more and more similar. I don't subscribe to the notion that Indian consumers are different from their American counterparts, and need product customizations

tailored to the local market. Consumers, irrespective of geography, are smart enough to tell a great product apart from an average one.

■ **OxygenOS has stuck to more of a stock Android appearance so far. Will this change?**

**Carl:** We are acutely aware of the needs of our customers. Today, Material Design features a great user experience. But does it mark the end of the advancement of human-computer interaction design? Probably not. There are always ways of improving things –at the same time, it's easy to add things, but hard to actually improve things. With OxygenOS, we have been trying to achieve balance by practicing both addition and subtraction.

■ **You have shown the inclination to make more products than just smartphones. What can we expect going forward?**

**Carl:** It's true that we've had a bunch of new categories in development, but luckily, they have all been scrapped. The decision to initiate R&D on those categories were done at a time when we were young and unfocused. We believe that only extreme focus can yield hero products, and focusing on a bunch of categories will only lead to mediocrity. It's easy to make a good enough product, but it's the final 10% that makes all the difference. ■

# OnePlus will focus on smartphones only, no more drones

In conversation with the co-founder of OnePlus about the OnePlus 2 and the company's plans for India

◀ Carl Pei,  
Co-Founder, OnePlus.



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Industry Connect

# Laptop conversations with Acer

We talk to Jerry Kao, President, Notebook Business Group, Acer, who oversees the product development and brand management of the commercial and consumer notebook business units for the Taiwanese company, and get his perspectives on what's next for Acer and the industry. Exclusive excerpts.

Jerry Kao, President, Notebook Business Group, Acer



Jayesh Shinde  
*jayesh.shinde@digit.in*

**Q Acer's trying to move away from a budget player in the notebook market by offering more premium products. What more should we expect from Acer in the next 18 months?**

**Jerry Kao:** Exactly! As you mentioned that in the past 6 to 12 months I have been trying to transfer my team to get rid of the entry platform trying to move to a more higher entry platform. So how to make my products more attractive? Not just in terms of cost but in terms of feature set is what I am going to do. In terms of notebooks, out of the top five or six notebook OEMs Acer is the only one where we are traditionally focussed on the so called budget or entry segments. But it also means that Acer is the only one which will have a chance to grow from budget to somewhere else. For those companies who are also suffering from too much budget, Acer is a power engine for them to go higher. For example, when talking about GPU company like NVIDIA, Acer is the only one that has the chance to increase GPU numbers because for example ASUS or Lenovo they all already have plenty GPUs. They don't have room to grow but Acer has good room to grow.

**Q With respect to Predator series, how will you convince users to consider Acer notebooks as a serious gaming brand?**

**Jerry Kao:** As a gaming brand we need to spread awareness because people don't understand – not at least – everything about gaming. So raising awareness of Acer I think again as a compelling product, we can get some business in gaming. When we talk about compelling in gaming, we need to find our uniqueness. Insight from the gamers is important, because copying is very easy, but some gamers don't know what they want. But when we perceive, when we observe we learn that they need something they don't know and we dive into details to understand why that is and then we bring it to our product. We are going to have more Predator notebooks with some features which some gamers don't know they want yet, but when you show it to them, they just go 'wow'. I think you will see that very soon. But, that does not mean Acer does not copy because I will have whatever my competitor will and on top of that I will have one or two unique gaming features. This is what I am basing my Predator strategy on.

**Q When it comes to OEMs, 95% of their SKUs are Intel based. Why don't we see enough AMD SKUs in the market?**

**Jerry Kao:** Let me put it this way, when I am thinking of offering a product, the vendors interaction is the last thing on my mind. I still think about what my customer needs, whether the features

are tempting to customers. So it is true that in the industry in the last one or two years we saw less and less AMD SKUs. If you are thinking about why, I need to say that in terms of competitiveness AMD SKUs are not as competitive as Intel. By competitive I am not just talking about cost, I am also talking about the power consumption, the future upgradeability or the system design and what not. All over I can see that the industry is somehow migrating to Intel, at least that's the trend. But at the same time I am working with AMD on different form factors or different form factor GPU, where Intel doesn't have the upper hand.

**Q When is the laptop market going to make the shift to SSDs wholeheartedly?**

**Jerry Kao:** Yeah! If I am talking about accurate timing I don't know. There may not be a 100% transfer because the hard disk still has the capacity matrix for some customers. For those who capacity still matters for, they will always go for hard disks. I don't think that market will die. SSD will become more and more prevalent, but SDDs capturing more than 50% market share is still a challenge because capacity still matters. Maybe in 5 or 10 years, when everybody has their data in the cloud, but that will take time. Plus, this is an industry where people are afraid to put private data onto the cloud.

**Community**

Two of our readers opine about the future on technology in India and of six web sites that everyone should know.

**16-camera Rig**

GoPro makes its 360 degree camera available  
<http://digit.in/Odyssey16>

# Giving the Evil AI

When some of the smartest people on earth such as Stephen Hawking and Elon Musk voice their concerns about sophisticated AI being something you'd want to watch out for, then you know not to take the threat of AI lightly. We pick some of the most evil ones from movies and games.

**Battlestar Galactica**

Humans get blitzed out of existence by an Alien robotic race known as the Cylons. Through the ages they've gone from looking like big metal clunk-a-saurus to being exactly like humans with flesh and blood coating. Their level of sentience is such that towards the end \*SPOILER\* they start fighting each other and kill off the evil ones amongst them. Karma's a Six.

**Star Trek**

The Borg are an ancient race that came to existence thanks to the race for perfection when humanoid species started sticking or should we say 'assimilating' technology into their bodies. After a while they met other species with better bodies and guess what...assimilated them and became even more powerful. Needless to say, the Borg collective is one race you'd best avoid.

**SPENT 5 MINUTES ON THE INTERNET****WANTS TO DESTROY ALL OF HUMANITY****Ultron**

Perhaps you aren't nerdy enough to know about Cylons or the Borg but you'll know this one. Ultron was made to be a protective shield for humanity, the one last thing Dr. Henry Pym or Tony Stark and Bruce Banner would have to do before taking off to Hawaii and retiring for good. Ultron kicked their butt and they were superheroes. We don't stand a chance.

**System Shock**

Even if a system is programmed to perfectly keep the human interests in mind you can always count on the said humans to screw-up the un-screw-up-able. This is what happens in the game System Shock where the AI's restraints are removed to allow a corrupt guy to 'delete' certain files. The AI, SHODAN then goes bonkers and starts slaughtering everyone in the facility.

**Mass Effect**

Sometimes you create an AI so powerful and so megalomaniacal that when it turns evil, it not only screws you over but even other species in the galaxy. Everything about the Reapers from the Mass Effect series, from their appearance to the loud boom that preceded their arrival is enough to make the collective population of the entire planet crap their pants.

**2001: A Space Odyssey**

This one didn't impact the entire race but it's one of the most iconic instances of when an AI went rogue. HAL 9000 was the onboard computer on a long distance space-faring mission. When faced with the threat of being shut down it decided to take matters into its own hands and kill the astronauts on board. The cheeky bugger even tried to make it look like an accident.

## New bartender!

Afraid of spilling cocktails or simply don't know how to make one, there's a new bartender in town. <http://digit.in/CocktailDIY>



## EduTech

Technology in the education sector is going leaps forward. Know how: <http://digit.in/TechinEdu>

Unwind

# How we unwind



### Lean On

'The Earworm of the Month' award goes to Lean On by Major Lazer & DJ Snake. Every month we fear what new song might have crawled into Jayesh's ear but towards the end of the month he'll ensure that we're all bobbing our heads in unison to the tune. We're wondering what made it stick, MØ's awkward dancing or the squeaky tune.

### Sid's birthday

Siddharth's birthday falls right in the midst of issue closing for us and this time around, Nachiket decided to help him be a better man by gifting him 'How to Drive a Tank and Other Everyday Tips for the Modern Gentleman' by Frank Coles. We don't know if the book helped but he sure seemed upbeat for chocolate cake.



### Ganpati Bappa Morya

It's that time of the year when addressing the elephant in the room means something completely different. Revered as the remover of obstacles, this closing made some of us take note and slip in a few prayers to help with the issue. If you're confused then you might want to read the diary to know more.

## digit DIARY

We've been calling for minions for some time and the call was answered by two young 'uns, both of whom were new to the city and you know what that means. The first one decided to disappear out of the blue and as of this moment is yet to respond to any of our emails. The other guy, Ashish Panigrahi, got a taste of the Mumbai locals in a manner straight out of a nerd's nightmare. Not only did he lose his portable drive but upon getting to work and opening his laptop, he was greeted with a nice big crack across the screen. We should have taught him better than to get onto the local with valuables. It's no place for a n00b.

It's been a good five months since Mad Max: Fury Road was released and when we received our copy of the game based on the movie, Abhijit was a little too excited and called dibs on reviewing the game. He got straight to it but came back after a few hours looking a little dejected. By dejected, we mean

to say that it looked like someone took a sledgehammer to his chest. Nachiket was all too happy to take up the task of reviewing the game, so be on the lookout for the review in next month's SKOAR! and you'll know why BabuMoshayee didn't like the game.

Jayesh managed to tick off another country from his bucket list as he made his way to Germany for IFA. And he didn't just go there for the product launches, oh no! He deep-dived into

German culture feasting on Currywurst (that's a bratwurst served with ketchup curry) while walking through the Neues Museum to look for Nefertiti's 3,500 year old bust. And it goes without mentioning that he spent some time at the Berlin Wall and the Holocaust Museum.

Need we say that this was another tough month for issue closing? Aside from the fact that we had two interns, those who'd gone on leave i.e. Anirudh and Mithun, got called in to help out with stories and the whole shebang. And if that wasn't enough, the month of September and October are filled with festivals which means we have even fewer days to get the magazine out. We won't bother you with mundane details as to how many pints of blood were shed in the process but it was definitely another month for the record books.

This will be the last month The Ant would've graced our office because next month onwards he'll be in the UK for

his master's degree so we went easy on him. Nachiket even indulged the guy in a 1-vs-1 match of Super Meat Boy. So... guess who sucks at Super Meat Boy? But honestly speaking, Nachiket, who wiped the floor with The Ant, called him the best Super Meat Boy player that he'd personally met. The Ant has sworn vengeance and has vowed to bring his controller next time around so that he can dish out the same treatment to Nachiket. Needless to say, we'll keep you guys posted. 



**A Sci-Fi weapon!**

Is it a Sci-Fi weapon or an Isotope reactor in these photos? Find out <http://dgit.in/SciWeapon>

**Google Divorces G+**

Finally Google is divorcing Google+, to provide users with more centered experience. <http://dgit.in/DivPlus>



Every month we recognise the best article written by our community members and publish it here. Keep up the good work, Digitians!

# Linketivity & connectitude

A peek at the future of technology and what you can do to make it a reality.



You might be wondering why I titled my article with two buzz words that sound like made up words from the rom-com television series 'How I Met Your Mother'. This is precisely why I'll answer that question at the end of the article; however, by then you'll probably not need me to tell you the answer.

*Robit Patil*

On the verge of inventing AI and designing supercomputers that calculate faster than 500 teraflops per second, we as a country are missing a point, and that's where we're going wrong. We have the most technocrats in the whole world and an increasing number of graduates, and yet are lagging behind and playing catch up with most of the superpowers in the world. The US is obviously at the top of this list with around 230 supercomputers (Source: ThePlatform.net <http://goo.gl/iriXUZ>) to its credit in the



Is this the future?

world's top 500 supercomputers. Trailing behind is China with 37 supercomputers, while we have 11 supercomputers. The real question here is: do we really need to play catch up in this game?

We're all currently imagining the next technical revolution to include holograms and AI-powered digital assistants, but when are we going to get to this elusive future? And will we get there first or are we will we arrive late to the party? How do we ensure we're one of the front-runners?

Let's look at the simple example of a software engineer. If you asked him about electronics, he'll simply state that it's not his domain. And that's where we're wrong. Whether it is in the field of

teaching or learning, we're always taught to keep ourselves updated about our domains. We're taught to focus on the things related to our career choices and department. However, what harm can come from knowing a few things outside your area of education? Ever see an architect suddenly forget how to design or draw after having looked at a few stock market calculations?

I myself witnessed the consequences of a computer engineer accidentally landing in Mechatronics for PG. He acted like life was being sucked out of him. However, since he had no choice, he had to complete his post graduation in the field. What happened to him, you ask? Nothing much, he just researched from a different point of view for a problem and acquired a patent. He was wise, no doubt. But what he did was try and stick to what he knew. However, this is what must change and it's the biggest problem nowadays, as nobody wants to know about each other's domains.

Let's digress for a bit. I'm sure you all know about the term 'IoT' ('Internet of Things'). For those of you who don't know, it is "The network of physical objects or 'things' embedded with electronics, software, sensors and connectivity to enable objects to exchange data with the production, operator and/or other connected devices based on the infrastructure of International Telecommunication Union's Global Standards Initiative." That's what Wikipedia says.

In simple words, everything is connected to everything. For instance, a thermometer in your house could tell your AC to manage the temperature based on weather conditions outside, your TV could show you live broadcast of your son's baseball game from his perspective and your watch could tell how much milk was collected by the milking machine. While all this sounds equally cool and challenging, it's simple enough to achieve by ourselves. All we need is the desire to learn about things we know little or nothing about. This desire and curiosity is lost in the system of ranks, posts and reservations. We need to awaken our curiosity to advance in the world. To learn that everything and everyone is connected. To change ourselves so that systems that make us work according to them work according to us instead. Because unless we change, nothing will.

In conclusion, my question to you is: what are you missing? Remember that thing you were curious about two years ago? Go learn it. Research about it. You have everything you need. And if anybody stops or tries to distract you by saying it's not your domain, tell them it's not their business. As for those words in the title, they're nothing but buzz words like "farhanitrate" and "prerajulisation" (from the movie, '3 Idiots') that made you read at least half of this ridiculously titled article.



## Google Apps @10/-

Several apps and games now available for Rs 10 on Google Play Store.  
<http://dgit.in/StorePrice>



## Dell to Back Start-Ups

Dell declared to support Start-Ups in India as they are unique and disruptive.  
<http://dgit.in/BackStartUp>

Digit Squad

# 6 websites everybody should know about

Here are some websites that will help you stay ahead of the curve



Yohen  
Tbounaojam

We limit ourselves to sites such as Google, Facebook, Twitter, despite knowing how diverse the web is. Maybe it's because we never get the time, but if you're keen on expanding your knowledge and want to stay ahead of the curve, the following websites will get you there.

### Privnote.com

If you're spellbound by movie scenes where secret agents receive messages on their phones that self-destruct after being read, you should absolutely check 'Privnote' out. It's a really easy-to-use website. Just write your note and then go to "options" to choose when you want it to self-destruct – immediately after reading, in 1 hour, 24 hours, 7 days or 1 month. Then all you have to do is set a custom password for the recipient to open the note – which could be only one letter or even 50 characters, unlike other websites. You're given a link, email that to your friend, and you're done. You're given a confirmation when the note is read and destroyed.

### Screenr.com

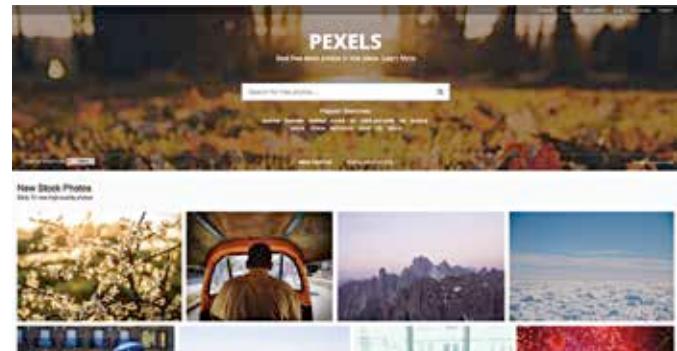
Want to record movies from your computer without having to download or install any software? 'Screenr' is the perfect tool for this. All you have to do is click on the record button and resize the frame. Then, click on the red button below the frame to begin recording videos as long as five minutes. When you're done recording, click on "Done" or press [Alt] + [D]. You can share these videos on social networks such as Facebook and Twitter, or upload them to YouTube.

### Ninite.com

Want free software but having a hard time downloading them one by one? Ninite will definitely free your day up. Simply choose the apps you want from within Ninite. The software runs the installations of all these apps for you in the background. The apps are installed in their default locations. Your installer will then update apps to their latest and stable versions. For apps that are up-to-date, this step is skipped. Ninite claims to download these app from each publisher's website.

### Pexels.com

Whether you're looking for images to be used in school projects, website designs or even office presentations, Pexels has the best collection of high resolution photos with over 3,500 free stock photos. All pics are hand-picked from free image sources. Categories are varied; they include Summer, Business, Abstract,



Sunset, Art, Car, Technology and City, among others. All the images on Pexels are licensed under the Creative Commons Zero (CC0) license, which means the pictures are completely free to be used for personal or commercial use, and you can modify, copy and distribute the photos too. You can also find stock videos at [videos.pexels.com](http://videos.pexels.com).

### Spreeder.com

want to learn how to speed read? Spreeder.com to the rescue! It's a free online speed reading training software. Speed reading is the art of silencing sub-vocalisation, i.e. saying words in your head while reading. Most people have an average reading speed of 200 wpm (Words per Minute), which is also how fast they can read a passage out loud. To begin, paste the contents of what you'd like to read in the box provided, and click the Spreed button. Change the settings below the box to change things such as wpm (how fast words are flashed), chunk size (number of words flashed at a given time), background colour, etc.

### Topsecretmail.com

Ever get the feeling that your private emails are being snooped on? With 'Top Secret Email' you can now encode and decode secret emails, so that no one will understand a single word in your emails. Top Secret Email is a highly secure and free internet service. Go to the "Encode Message" page, just type your secret message and press "Encode". Then, copy-paste it into your usual email client such as Outlook and send as normal. The recipient copy-pastes the coded message from your email and presses "Decode Messages" after adding your Unique Key – a password agreed upon in advance between you and the person/s you intend to secretly correspond with. There's no software to install, no registration, no login and no charge. All the website asks is that you share its secret with a friend ... or two!

Also try – [www.infocrypt.com](http://www.infocrypt.com)



### Brave or Fool?

Want to experience close encounters with animals without doing it. Check out <http://dgit.in/WildBrave>



### DNA Velcro.

An alternative to 3D tissue printing is DNA used as velcro to form cells into 3D structures. <http://dgit.in/DNAVelcro>

# Is Google being evil?

**"Don't be evil" says Google Inc. as part of its Code of Conduct.**

By Bhoomika Rath & Cyril Vatteli

*readersletters@digit.in*

**W**hat the European Commission has been seeking to find out since the last five years (or claiming to while it tended to its online farms) is whether Google's code of conduct is just another page on their website or is this a honourable company who wears its motto like an armour in letter as well as spirit.

If nothing else, the last decade has taught us the importance of having one family member attend law school. You see, Google has been charged with something called 'abusing its dominant position' in online search. (Wait a minute, doesn't this allegedly happen each time someone or something make it big?). So how did it all start and is there really a problem?

With over 90% market coverage in the European Union, Google has quite a few enemies and they remembered that 'with great power, comes great responsibility', perhaps Google forgot. The allegations were first cast by 'Foundem', a shopping comparison website and heavily backed by Microsoft. Soon

illustrious names such as BDZV, VDZ, Yelp, Expedia, IComp, Hot-Map, 1 Plus V, Euro-cities joined the gang.

### So what happened?

In November 2010, the European Commission issued a Press Release detailing its intention to open investigation against Google Inc. on grounds of alleged:

- unfair treatment of competing vertical search products (On 16th September 2015, if you searched for 'Stayzilla', you'd be surprised when 'Airbnb' shows up as your first sponsored search result. \*Drum rolls\* for the one with deeper pockets).
- Preferential placement of Google's own services for promotion of its own business (Looks like none of the aggrieved companies tried to search for 'maps' on Yahoo! No prizes for guessing whose services occupied the first three spots. Even rivals preferentially place Google's services on their websites. Wonder what that does for this contention?)
- Exclusivity obligations on Google's advertising and distribution partners (read simply, this means Google forced upon its partners one-sided contracts at gunpoint)



"They took my search away!"



## McAfee for President

The AntiVirus mogul plans to stand for elections in the US.  
<http://dgit.in/PrezMcAfee>



## Ringa Ringa iPhone

Watch what happens when an iPhone rings...around ants. Follow on here:  
<http://dgit.in/AntPhone>

Feature

Since mobile applications have been the hot cakes lately, it wanted to be a part of this investigation and a company called 'Fairsearch' decided 'why not?'. Fairsearch filed a complaint against Google in 2013 over its android operating system on mobile phones thereby limiting market access of rival mobile operating systems. Doesn't this sound like a case of sour grapes? Then perhaps the entire premise of 'abusing dominant position' is a saga of how sour the grapes tasted to the fox occupying the unmentionable 'subservient' position.

These allegations were forwarded to Google Inc. in March 2013, to which Google, without any hesitation offered a settlement. It wrote off all allegations against itself and said it would bring about further transparency in its dealings, the degree of which could only be paralleled by Google itself. Given the U.S Federal Trade Commission's investigation it had recently dusted out of its way by a narrow margin on the similar grounds, transparency and honourable intentions seemed to be the call of the day.

### Google's remedial measures

It submitted a 'Commitment' to the European Commission proposing certain standards of conduct it would follow in order to ensure that internet users would have the choice to choose someone else. Basically it decided to continue to make its presence felt but also decided to draw attention to the fact that it may be the granddaddy of search engines but there are others and it knows where you can find these 'others'. Google said it would guarantee that display of its own specialized search services and that of its rivals shall be in a comparable format.

What this means is that, whenever Google promotes one of its own super efficient specialised search services, there will be three rival services also displayed prominently on the page, in a way that is clearly visible to users. Also, not only will these rival services be 'present', they will also be pretty (Yay! to hell with beauty is only skin deep or that it is in the eyes of the beholder). For example, if Google uses a picture to promote its services (Psst: ultimate seduction technique), rival services will also be allowed such a picture.

Moreover, Google decided to stop copy pasting. It offered other service providers an 'opt out' in case they were no longer interested in being on the merry go around. Up until now, Google was able to copy content from rivals without restriction. Also, the opt out by a rival would not be held against it by Google while determining rankings.

Google also promised to remove exclusivity requirements in its agreements with its advertising and publishing partners and also remove restrictions on advertisers from running their search advertising campaigns across Google's and competing search advertising platforms.

This makes one wonder, whether Google is really playing devil or does the devil have fantastic advocates.

Google also offered a grand explanation of how rankings of rival links would be conducted. It has come up with a 'vertical sites pool' and has attempted to explain how exactly it intends to fish.



Google: "And then \*sob\* he said 'Did you mean...'"

### That seems fair enough, right?

Bearing in mind this commitment and barking up one's logical side, doesn't 'promotion of own business' seem to lose merit as a contention? The largest revenue for Google is Adwords. Most other Google's operations (search, maps, Google drive, Chrome, YouTube, Translation, Google+, gmail etc) are in the nature of charity, so to say. Therefore the concept of making a profit on

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these is completely eliminated. One may argue that it still promotes its own operations unabashedly, but does it do so 'solely', is the real question. Marketing innovation isn't a crime, stifling the competition by unfair means is. If Google runs its search engine in a manner to make money on Adwords / Adsense, where is the murder? If it wouldn't make profit out of its business, it may as well label itself as a vehicle of public good only.

By February 2014, Google's proposal had undergone two rounds of careful consideration and eventual rejections.



Pictured: A gentler version of CCI

However the third time showed promise to the extent that the EC made an official statement indicating a possible settlement. Unfortunately, the eighteen complainants weren't satisfied and the Commission decided to stay in the news.

The Commission decided that being in a dominant position, it is incumbent upon Google to treat its rivals fairly. As the biggest kid in class, you have to be nice to the puny ones. You can't throw them out of the window just because you can. In fact, you have to bolt the doors and windows to ensure the skinny ones don't fly out with the wind. That is the true mark of not being a bully. The Commission dismissed Google's third proposal as 'insufficient' to do so. One may wonder, why noticeable players such as Amazon and Ebay are conveniently being ignored as mighty adversaries of Google. This has been made to look like a situation where other companies in the same line of business can thrive only if Google decides to be a passive old gentleman. Slowly but surely Amazon is creeping up the ladder and market share. Google's representatives have used this argument along with more legal ones as an indication to the Commission that they are prepared to fight tooth and nail in order to do business

their way. Given this response, the Commission can now choose to immediately impose sanctions against Google and levy penalties capped at 10% of the company's annual global revenue. Of course seeking a fresh proposal may be a delightful way to extend this five year investigation by a couple of years more.

In return, Google reserves the right to appeal against any commission decision at EU courts which, just like our Indian judicial system, could take another 5 logo changes before a conclusion is reached.

### The story here

In India, while the story is the same, there seems to be a bigger battle for Google brewing. Beginning in 2011, Indian companies have attacked Google saying that its Adwords policies are vague, and confusing. They believe that it is a conniving, evil corporation that invites certain companies over to its house and then sits and drinks with them while making plans to destroy the other companies, while at the same time possibly thinking about taking out the company sitting right in front of it. Possibly. While a minor case here and there has been dismissed, the one filed in 2011 by Bharat Matrimony, a matrimonial site you have definitely never wasted time on, and Consumer Unity & Trust Society, a non-profit organisation with a clear motive, stuck.

All of these complaints go to an agency called Competition Commission of India or CCI, the organisation which to a certain degree states that when you play football, you cannot build a goal smaller than the ball itself. Except this happens with companies. And here, boy is the CCI annoyed. When Google turned its head away and pretended not to hear, CCI took out its cane and whipped it with a fine of 1 crore rupees to show that it is serious.

Now, the CCI says that Google will have to pay a huge fine, of around \$6 billion, if it is found out that Google was being the quintessential evil corporation. While Google has said some things in its defence, it seems that it could be turning its head away again. After the period by which it was supposed to have defended itself passed, Google said "Hey CCI, I just remembered, I can't give you my answer till you give [secret documents which we will never know of] which will let me provide a better reply."

### But what's next

This is roughly where the case stands at right now. Expect some more drama your way when Google says "Wait wait, THIS is what is happening here." To take a guess at what could possibly be the conclusion to this saga, one must wonder how to see this. Are all these countries simply putting pressure on a company because a company of this size cannot reach where it has without annoying somebody? Is America the gentle, forgiving English teacher, Europe the strict maths professor, and India the anal Hindi teacher who would not let you leave the class until you write down that paragraph to perfection? Or is Google the bald man sitting on an atrocious leather sofa stroking an exceptionally expensive looking but ugly cat?

Whatever it is, only one thing is for sure. However evil or unfair Google ends up looking in this whole saga, we will still not migrate to Bing. Ever. 

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<sup>^</sup>As per research validated by creative factor, on manufacturer information available on respective corporate websites as on 24-04-2015. <sup>#</sup>Battery life based on BrowsingBench test run by Dell in November, 2014. Visit [www.eembc.org](http://www.eembc.org) for more information. System has 150-nits (40%) brightness, WiFi on, 4GB memory, Intel HD 5500 graphics, Intel Core i5 processor, 128GB SSD and FHD display. Test results should be used only to compare one product to another and are not a guarantee you will get the same battery life, which may be significantly less than test results and varies depending on product configuration, software, usage, operating conditions, power management settings and other factors. Maximum battery life decreases with time and use. \*Subject to T&Cs. For more details, see <http://www.dell.co.in/tnc>. **Trademarks:** Dell, Inspiron and UltraSharp are trademarks of Dell Inc. Intel, the Intel logo, Intel Inside, Intel Core and Core Inside are trademarks of Intel Corporation in the U.S. and/or other countries. Microsoft and Windows are trademarks of the Microsoft group of companies. All other trademarks are the property of their respective owners. Dell Inc. disclaims any proprietary interest in these trademarks and names. **Copyright:** © 2015 Dell Inc. All rights reserved.

